

THE MILLING WORLD

AND

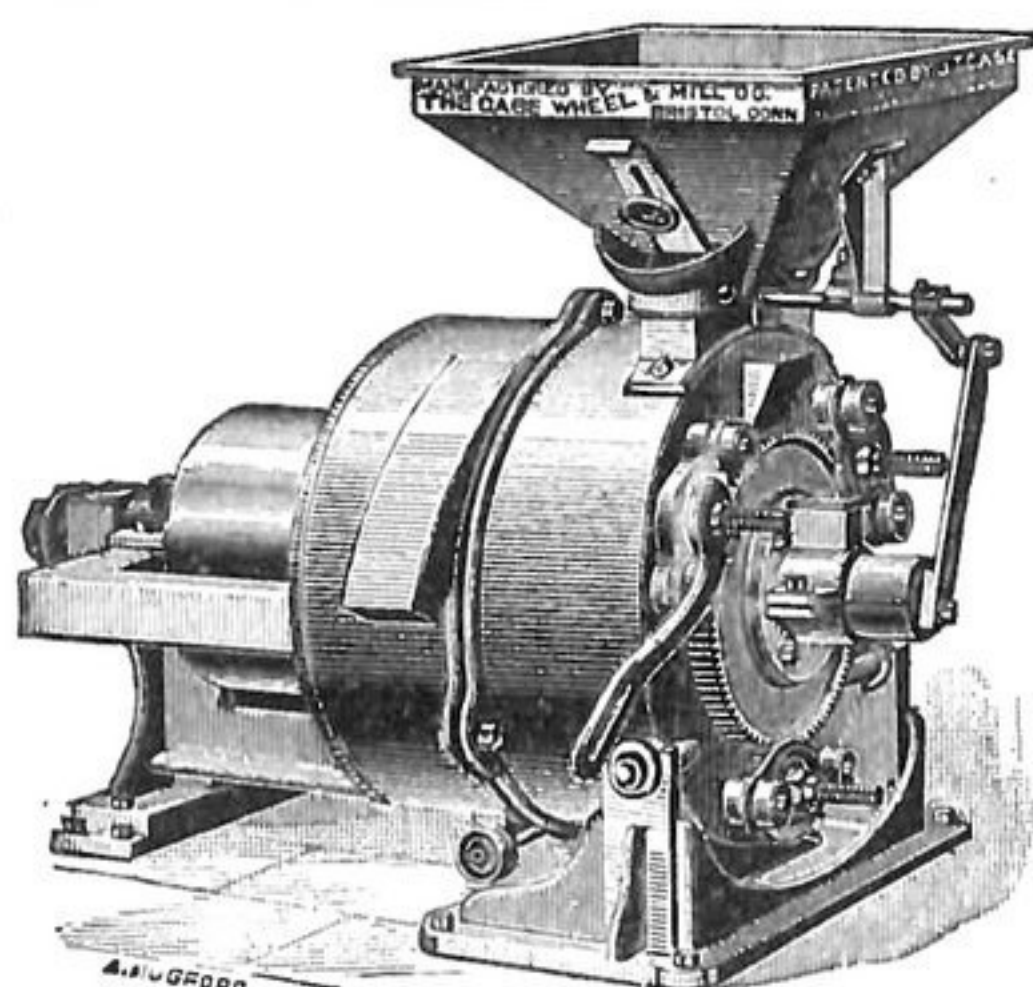
CHRONICLE OF THE GRAIN AND FLOUR TRADE

PUBLISHED EVERY MONDAY MORNING.

VOL. XX. No. 14.

BUFFALO, N. Y., JUNE 3, 1889.

\$1.50 PER YEAR.



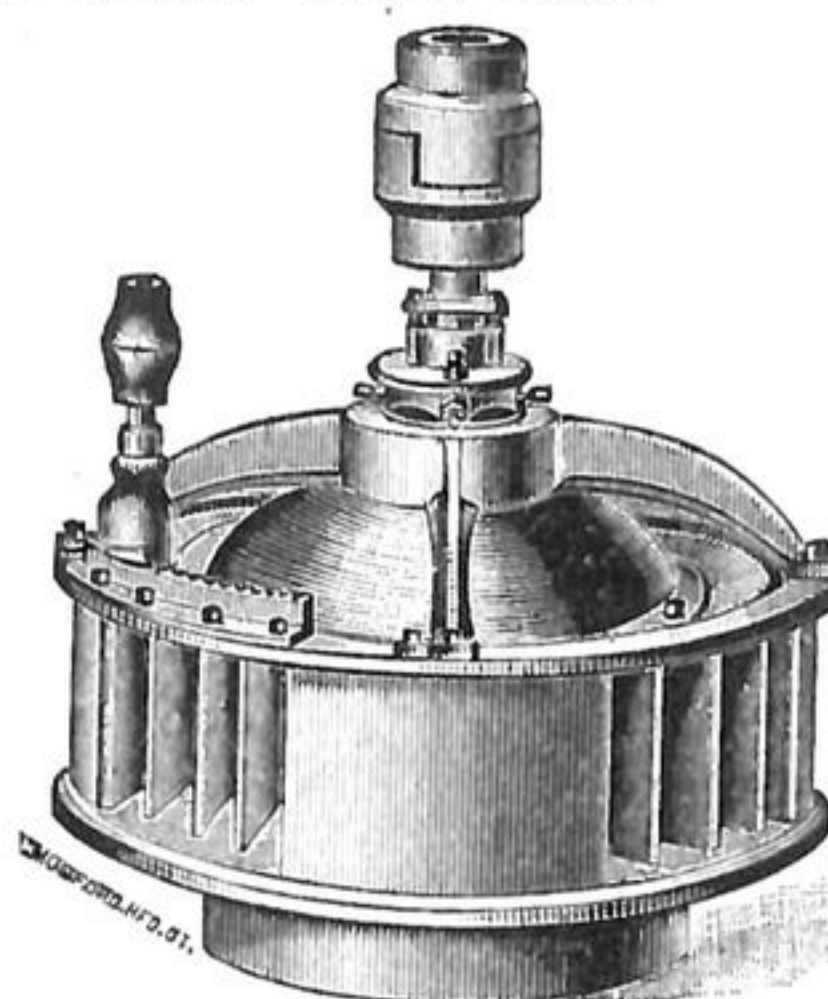
VICTORY OVER ALL OTHERS. SINGLE & DOUBLE VERTICAL GRINDING MILLS. (J. T. CASE'S PATENT.)

FACTS ARE MIGHTIER THAN ASSERTIONS. READ WHAT THEY SAY:

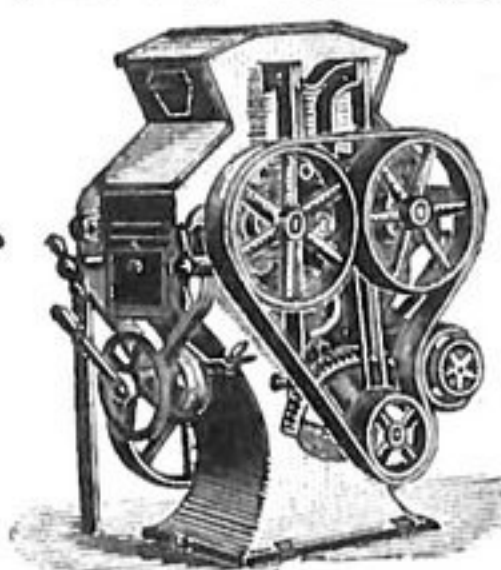
"Our 20-inch mill made by the Case Wheel & Mill Co. is in every respect satisfactory, easy to handle, and best results obtained of any mill in the country, with same quantity coal and power."—A. S. RUSSELL & Co., Meriden, Conn.
 "Superior to any mill in use."—Geo. WESTON, Bristol, Conn.
 "The best satisfaction in quantity and quality."—CHILD'S ELEVATOR, Manchester, Ct.
 "We take pleasure in recommending it."—GARLAND, LINCOLN & Co., Worcester, Mass.
 SEND FOR CATALOGUE—ILLUSTRATED AND DESCRIPTIVE.

The Improved National Turbine Water Wheel

The Best for Economy; The Best for Durability; The Best for Power. ONE THOUSAND FIVE HUNDRED NATIONAL WATER WHEELS IN USE Prove that our Assertions are Supported by the Leading Manufacturers in the Country. Send for illustrated catalogue and prices to the manufacturers.



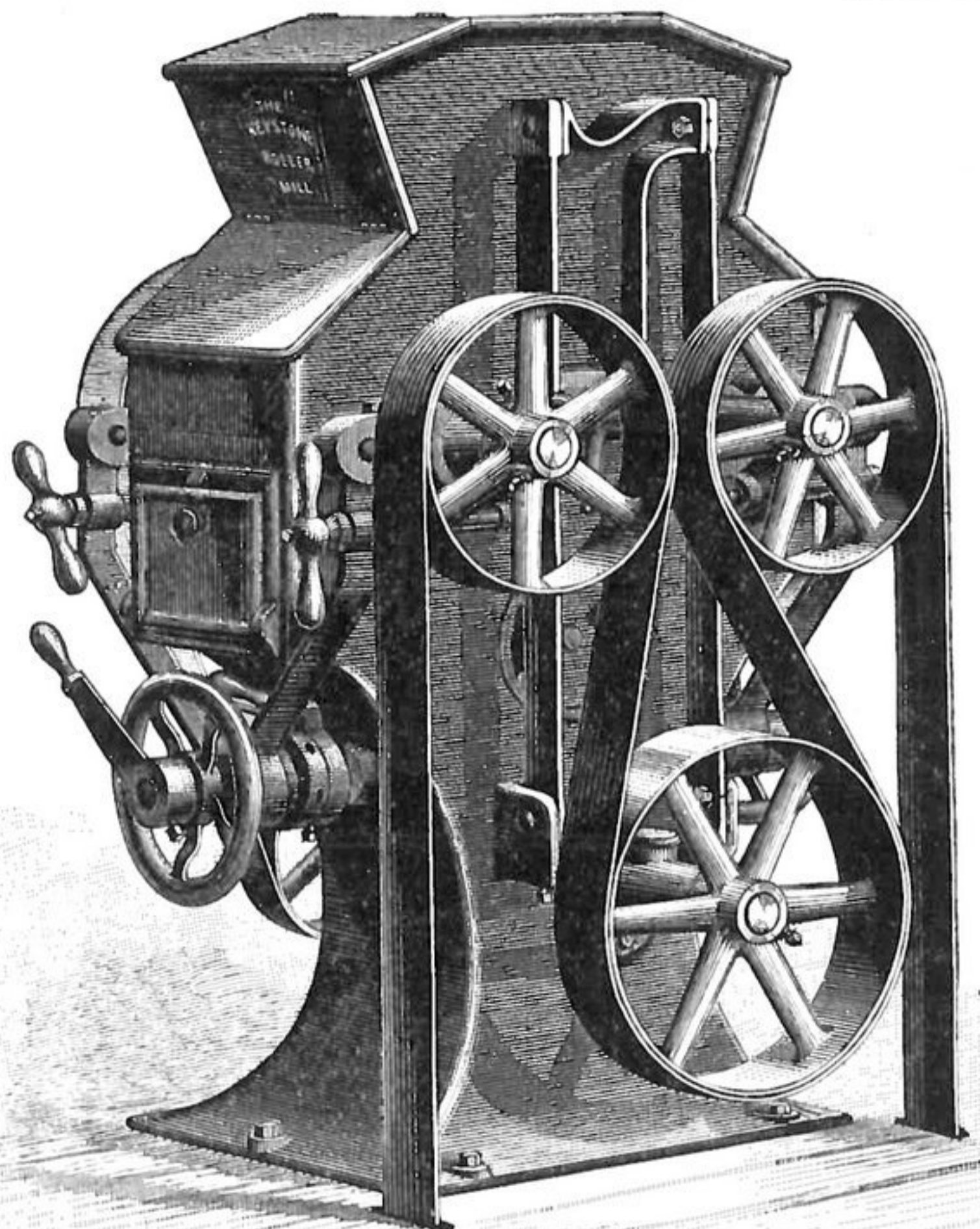
The Case Wheel & Mill Co., Bristol, Conn.



Wheat Roller Mill.

THE "KEYSTONE"

WHY IS IT THE BEST ROLLER MILL IN THE MARKET?

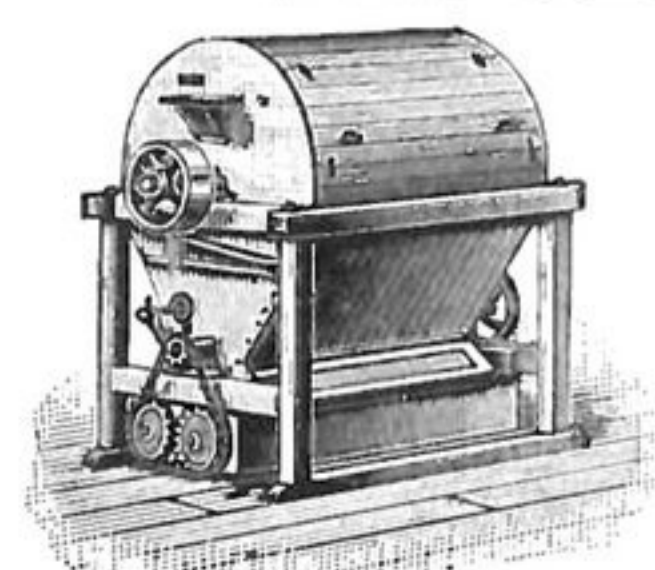


THE KEYSTONE FOUR ROLLER MILL.

Complete Outfits for Flour or Corn Meal Mills of any Capacity.

THE J. B. ALLFREE CO., INDIANAPOLIS, IND.

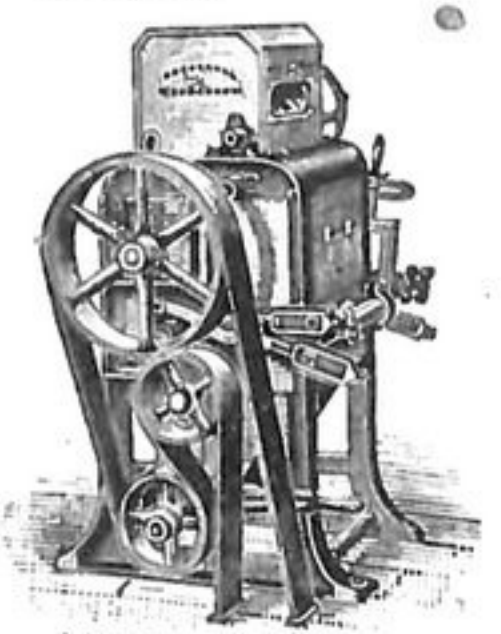
103 & 105 South Pennsylvania Street.



Bran Duster.

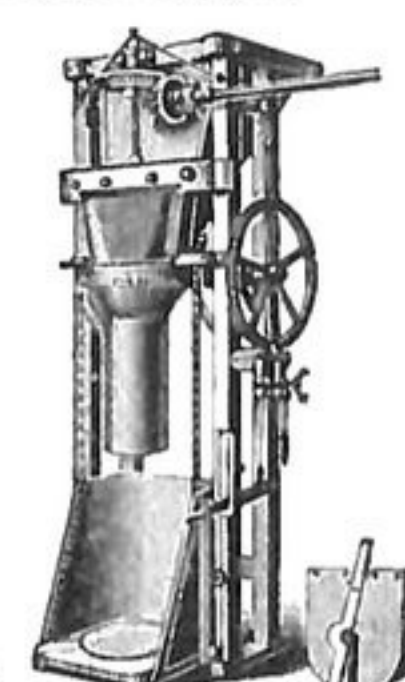
BECAUSE it runs 25 per cent. lighter than any other roll.
 BECAUSE all bearings are universal and never get out of line.
 BECAUSE you can throw the rolls apart from either side.
 BECAUSE you can set both ends of the roll at the same time with one movement.
 BECAUSE only one spring is used for both ends of rolls.
 BECAUSE there is no slip to the differential.
 BECAUSE no dust escapes from machine, all openings being covered.

Also ask for prices on the only Noiseless Sieve Scalper, the "Allfree" Improved Purifier, "Climax" Bran Dusters, and "Allfree" Flour Packer.



Corn Mill.

Also ask for prices on "Allfree" Centrifugal Reels, "Success" Bolter, Three Reduction Corn Mills, Latest Improved Designs.



Flour Packer.

Some Millers' Opinions

EXPRESSED THIS YEAR, 1889.

SHREVE, O., Jan. 25, 1889.
THE CASE MFG. CO.

Gentlemen: We called at Bank Jan. 22d and paid our last note, which we believe closes our dealings so far as our contract with you for remodeling our mills is concerned. We want to say that we are entirely satisfied with all our dealings with you. Our mill is all we could expect, and is doing us good work. Extending to you our best wishes, we remain,

Very respectfully yours,
FOLTZ & BRENNEMAN.

WAVERLY, O., JAN. 27, 1889.
THE CASE MFG. CO.

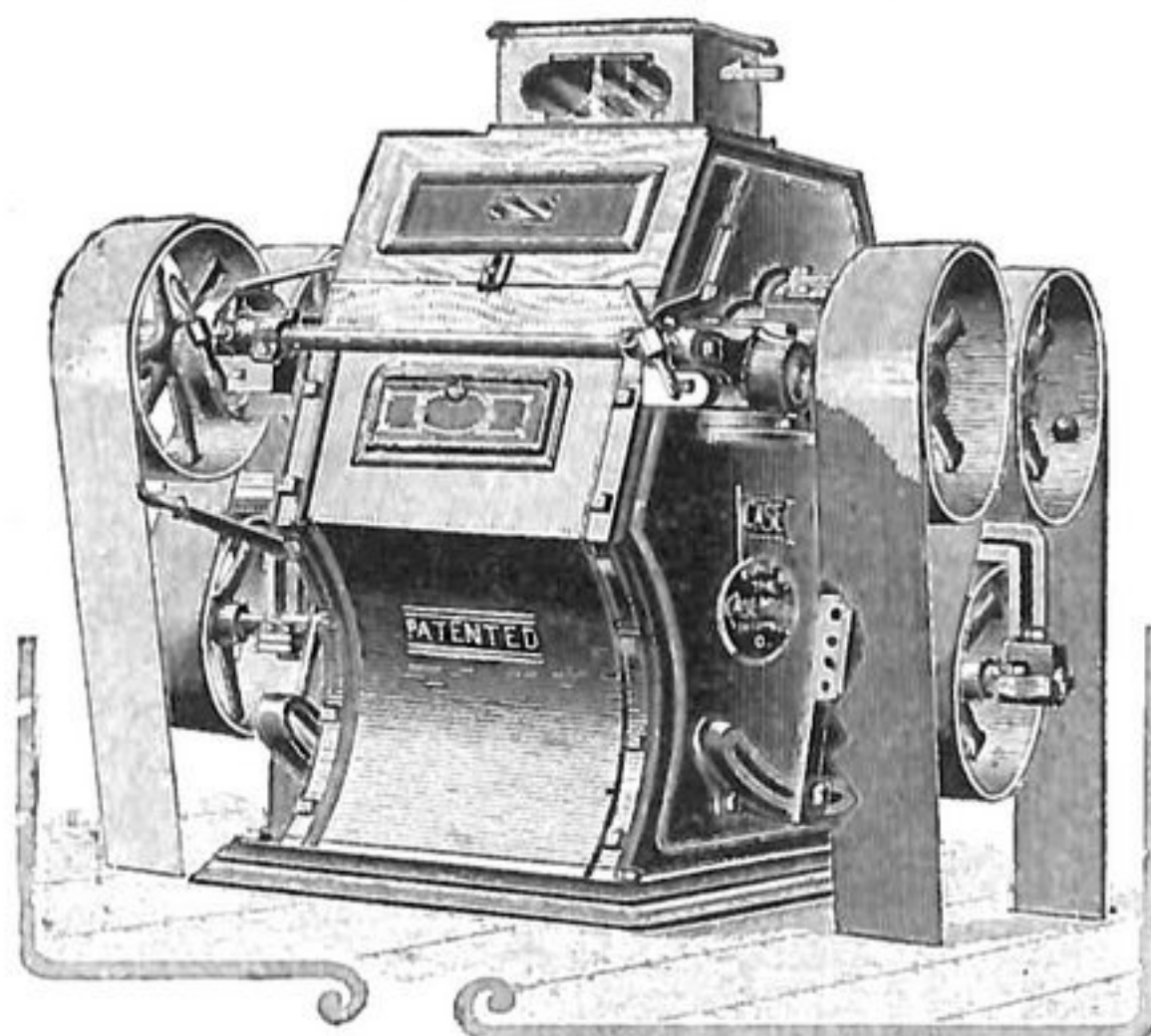
Gentlemen: Although it has been but a few weeks since I have gotten my Waverly Roller Mills started as recently re-furnished with your system of breaks and rolls, yet I have already learned to my satisfaction that your outfit of milling machinery is the best in use to-day. I am now making a grade of flour that is equaled by few and excelled by none, in fact superior to any flour produced in this part of Ohio, and is fast distancing all competitors in the market. I can conscientiously recommend you as General Mill Furnishers.

Yours truly,
JAS. EMMETT.

E. M. NEWTON. D. B. SMITH. G. TERRY.
OFFICE OF GUTHRIE MILL CO., }
GUTHRIE, KY., Feb. 26, 1889. }
CASE MFG. CO.

Gentlemen: Yours of the 20th to hand and in answer to inquiry about the five Inter-Elevator Flour Dressers bought of you will say that they are working perfectly satisfactory, and we regard them as being the best bolts we have ever seen, and if we had to build another mill, would use no other. We will take pleasure in showing and recommending them to any one who may be in need of a Flour Dresser. Wishing you much success in the future, we remain,

Yours truly,
GUTHRIE MILL CO.,
By E. M. Newton.



The Gem Roll of the World.

LEONIDAS, MICH., Feb. 4, 1889.
THE CASE MFG. CO.

Gentlemen: In reply to yours of the 31st ult., as to how I liked your machinery, would say I have a 3-break mill using 3 double stands of 6x18 Case rolls, one double stand of 6x15 rolls made by another firm. We started our mill September 1, 1888, and I must say *your rolls are more than you claim for them.* They started from the word "go." Not a single "hot journal," or any thing else to cause any trouble in the least. The other stand has been a continual bother from the start, running hot, and the feed would not work only in bunches, and let me say right here *that they cost me more money than the Case did.* and I mean in the near future to displace it by a Case. Your feed is *simply perfect.* It feeds even the full length of the rolls, and the beauty of all is we can stop and start the Case Rolls without touching a single lever; the other stands wants two men to stop and start. I also have a double stand of 9x18 Case rolls for feed. It does good work with half the power a 36-inch buhr took for same amount of work. Should you wish to send any parties here to see my mill at work, I can prove to them all I have said. With very best wishes to the Case Company, I am, very respectfully yours,

GEO. ENGEL,
Successor to Espenhain & Engel.

WE BUILD NONE BUT FIRST-CLASS MILLS

AND WILL GUARANTEE

Each Mill We Build to Produce Results Excelled by None

COMPLETE LINE OF MILL SUPPLIES AT LOW PRICES.

We have the most Complete Plant for Regrinding and Recorrugating Rolls, and put in Any Style Cut Desired.

MACHINE WORK OF ALL KINDS DONE PROMPTLY:

—ADDRESS—

THE CASE MFG. CO., COLUMBUS, O.

PLEASE MENTION "THE MILLING WORLD."



VOL. XX. No. 14.

BUFFALO, N. Y., JUNE 3, 1889.

\$1.50 PER YEAR.

CERTAINLY there is something wonderful, almost suspicious, in the uniformly favorable reports on the condition of the wheat crop in the United States. Last year the bulls toned the reports, and the result has been well nigh disastrous to trade. Now the bears appear to be toning the reports, and possibly there may be another year of disaster to trade as the result of too much "bear" in the soup. THE MILLING WORLD sincerely wishes to see the favorable reports verified in a magnificent crop of fine quality, but long observation of preliminary crop reporting, as practiced under suspicious influences, has made us skeptical and diminished our power of faith in bull and bear reports.

BRITISH capital, not finding profitable employment at home, is seeking investment in the United States. Already British capitalists have spent millions of dollars in the purchase of American beer breweries and salt works, and now it is reported that they are casting longing eyes upon American flouring-mills. Recent reports from Minneapolis state that offers have been made for some of the important flour-making establishments in that city. Evidently the British money-owners consider the United States a good country in which to invest their unemployed capital, and if they begin the wholesale acquisition of our flouring-mills, we would suggest that they bind themselves not to begin the practice of "blending" wheats to grind. Should British money gain control of some of the important mills in this country, it would be interesting to note how far the British owners would adopt American methods of grinding, and how far they would stick to the British methods.

OUR thoroughly comical and consequently highly esteemed Milwaukee cotemporary, "The United States Miller and The Milling Engineer," with the balance of its cognomen left to conjecture, is in a rather bad way, we fear. It is as thin as a June shad, as dull as a hammer, and as hysterical as a chalk-eating, slate-pencil devouring and tea-ground guzzling girl. Colonel, take "Safe Cure." Abandon your advertisements of one-hoss shays, of jewelry, of tailors, of directions for keeping store, and of railroads, all presumably paid for in kind, and stick to "Safe Cure." It is said to work well "on the dog," therefore you will be safe in trying it. If your diet and beverage prove too rich for your blood, try "Safe Cure." And say, Colonel, what's the matter with amputating a league or so of that awful title, so all-embracing in significance, so eternitously elongated and so lugubriously and so ridiculously inapplicable to your monthly flux? Cut it off! Boil it down! Don't be a clam! Avoid cacophonical lengthiness! Don't be hebetudinous! Take "Safe Cure"!

AFTER all the statements of disaster to the wheat crop of the United States in 1888, it is now said that the surplus on hand in this country on July 1 next will be not far from 50,000,000 bushels. Despite the persistent bulling of that crop, up to \$1.20 a bushel in New York and to \$2 a bushel in Chicago, and the exportation of something like 75,000,000 bushels, there seems to have been a really large crop of wheat in 1888. The most liberal and the most reliable of all

the crop reports published in this country is the government report, and even that report set down the wheat crop at only 415,000,000 measured bushels, while there is good reason for believing that the crop was actually close to 450,000,000 bushels. The other reports generally ranged so far below the government report figures that the close student of the situation is justified in believing that the private reports are mere guess-work, hit-or-miss estimates that are not based on actual information gathered from numerous points, and that they are practically worthless as standards upon which to base commercial transactions. The outcome of the crop of 1888 may not give complete confidence in even the government crop reports, but certainly those reports have been shown to be infinitely better than even the best of the pretentious reports vaunted by Prognosticator Prime, and "Bradstreet's," and other self-styled "expert" crop estimators and reporters. Looking back over the walls of Prognosticator Prime at the Buffalo convention in June, 1888, and at the wonderful bull-talk of miller Pillsbury, of Minneapolis, later in the season, after his return from Europe, it is not easy to understand on what foundation Messrs. Prime and Pillsbury based their talk. Certainly their information must have been at fault.

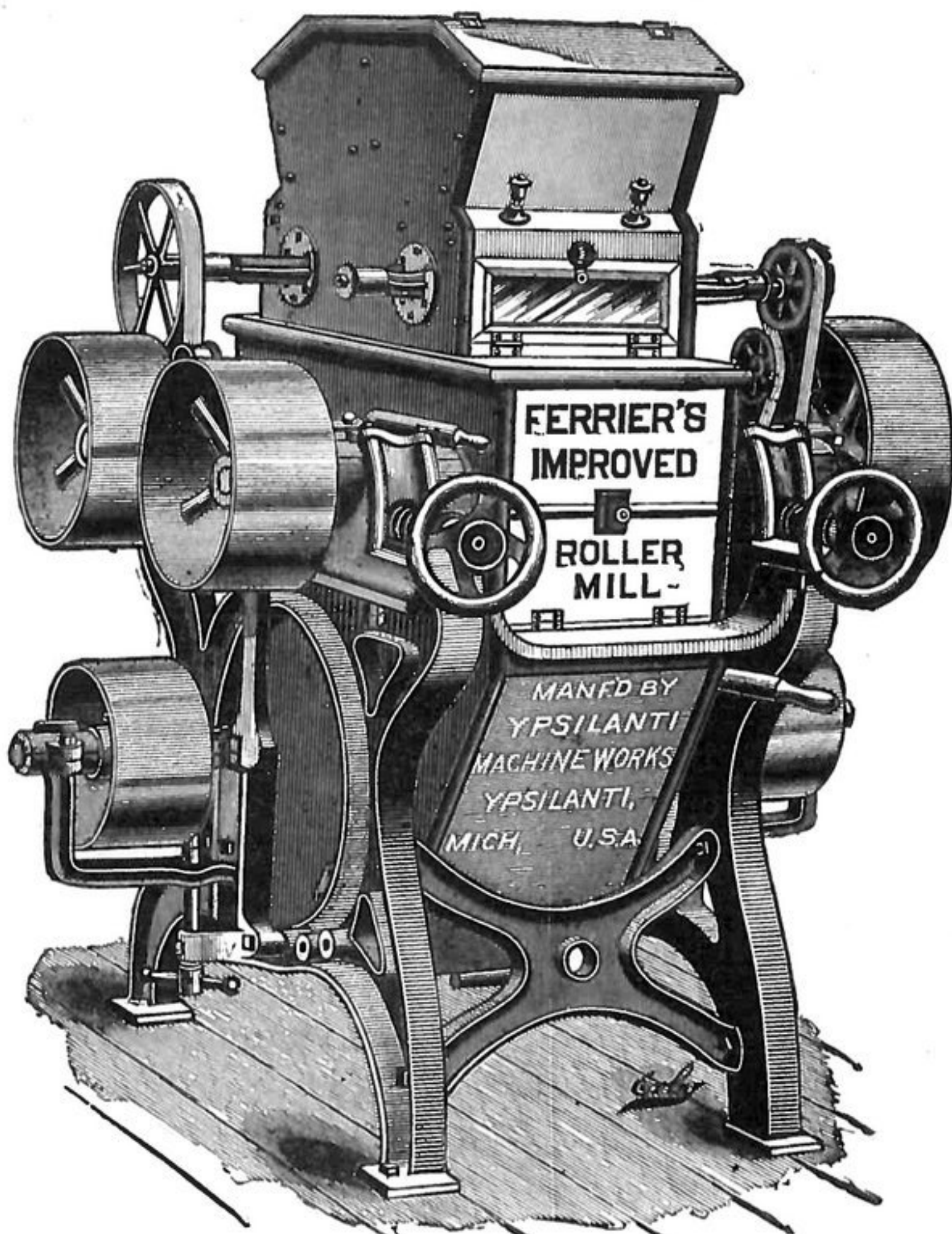
CANADIAN estimates set down the wheat acreage of Manitoba in 1888 at 520,000 acres, against 432,000 acres in 1887. The total production of wheat in Manitoba, or, rather, the harvested crop, is set down at nearly 6,000,000 bushels. The truth will be out in time. Canadian boomers claim an average of over 30 bushels to the acre as the yield of wheat in Manitoba, and they claim that less damage was inflicted on Manitoba than on Dakota and Minnesota by the frosts of August, 1888. Juxtaposit these two claims, turn on the light of truth, and observe the resultant. 1. An average of 30 bushels to the acre calls for a crop of 15,600,000 bushels of wheat in Manitoba. The crop of 1888 turned out nearly 6,000,000 bushels. 2. If Manitoba suffered less in proportion than Dakota and Minnesota from the August frosts in 1888, the average of 30 bushels being accepted as reliable in Manitoba, the figures of the crop would be very different. Minnesota and Dakota in 1888 yielded over 70,000,000 bushels of wheat, against 90,000,000 bushels in 1887 on about the same acreage, the decrease charged to frosts of 1888 being 20,000,000 bushels, a loss of nearly 22 per cent. In Manitoba the acreage and average yield claimed call for 15,600,000 bushels. Crop shows 6,000,000 bushels, a loss of about 9,600,000 bushels, nearly 62 per cent. Should that loss be charged to the August frosts of 1888? What will Manitoba gain by the publication of boom figures and assertions that thus easily refute themselves? Every dilemma has at least two horns, and the dilemma of the Manitoba boomers has about as many sharp-pointed horns as there are quills upon the fretful porcupine. Either the Manitobans must abandon their contention for immensely larger average yields than Dakotans and Minnesotans claim, or else they must admit greater damage by the 1888 frosts in Manitoba than the output proves to have been suffered in Dakota and Minnesota. Which shall it be, Messieurs Manitobans?

YPSILANTI MACHINE WORKS, YPSILANTI, MICH.

MILL BUILDERS

And Manufacturers of

FLOUR MILL MACHINERY



Sizes of Ferrier's Improved Four-Roller Mills.

6x12	6x15	6x20
9x15	9x18	9x24

YPSILANTI MACHINE WORKS, YPSILANTI, MICH.

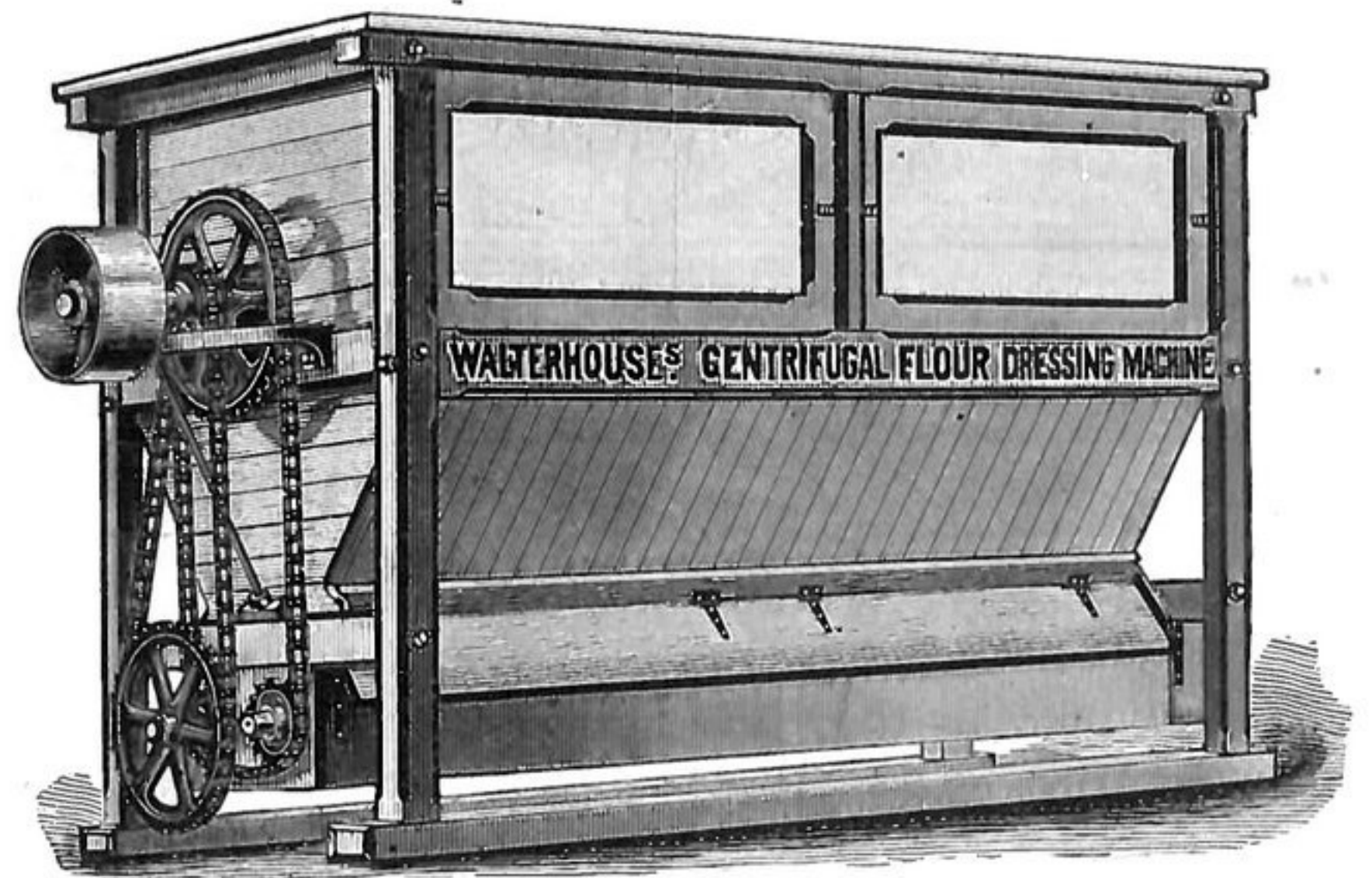
Gentlemen: We have had a line of your "Roller Mills" in use for over two years, and they have given entire satisfaction in every respect. They work like a charm, and their ease of adjustment and solid structure, together with the excellent finish you give them, can but recommend your machines to the milling public.

Yours respectfully,

A. R. DICKINSON & CO.

NASHVILLE, TENN., MAY 3, 1889.

Dealers in Bolting Cloth. Walterhouse's Centrifugal; Walterhouse's Slow-Running Flour Dresser with Inside Cylinder; Plain Round Reels; Scalpers, Bolting Screens, Etc., Etc., Etc.



JOHN ORFF, PROPRIETOR OF
EMPIRE FLOURING MILLS.
FORT WAYNE, IND., APRIL 10, 1889.

YPSILANTI MACHINE WORKS, YPSILANTI, MICH.

Gentlemen: The Centrifugal Reel bought from you some time ago is doing its work complete in every respect. It does a large amount of work, and does it well. Should we make further changes in bolting, shall use more of them. Wishing you success, we remain,

Respectfully,

JOHN ORFF.

TO YPSILANTI MACHINE WORKS.

OFFICE OF LEXINGTON MILL CO.,
LEXINGTON, MICH., JAN. 22, 1889.

Gents: In reply to yours of June 5th, would say that we are well pleased with our mill. It has more than met our expectations. Although it was feared that the six-inch rolls would not prove a success, we find them to be complete in every respect. We are making as fine a flour as there is made in the state, and we guarantee our patent to be equal to Minnesota Patent. The mill has given us no trouble whatever since we started it, and for plan and workmanship, your Mr. G. Walterhouse deserves great credit. If your friends doubt it would be pleased to have them come and see for themselves.

Yours respectfully,

LEXINGTON MILL CO.

Dawson's Roller Mill

Is acknowledged to be the very best in the market. It has our Patent Automatic Centrifugal feeder, never failing to feed the stock the full length of rolls in an even sheet. It is the Latest and Best feed out, uses less power and is simple in construction. It can be placed on any style of machine with little expense. We use for roll bearings phosphor-bronze metal which will admit rolls being run at any speed without heating and with little friction, and uses little oil. We use the Dawson Corrugation, which is admitted the best in long or short system mills as the action is granulating rather than CUTTING.

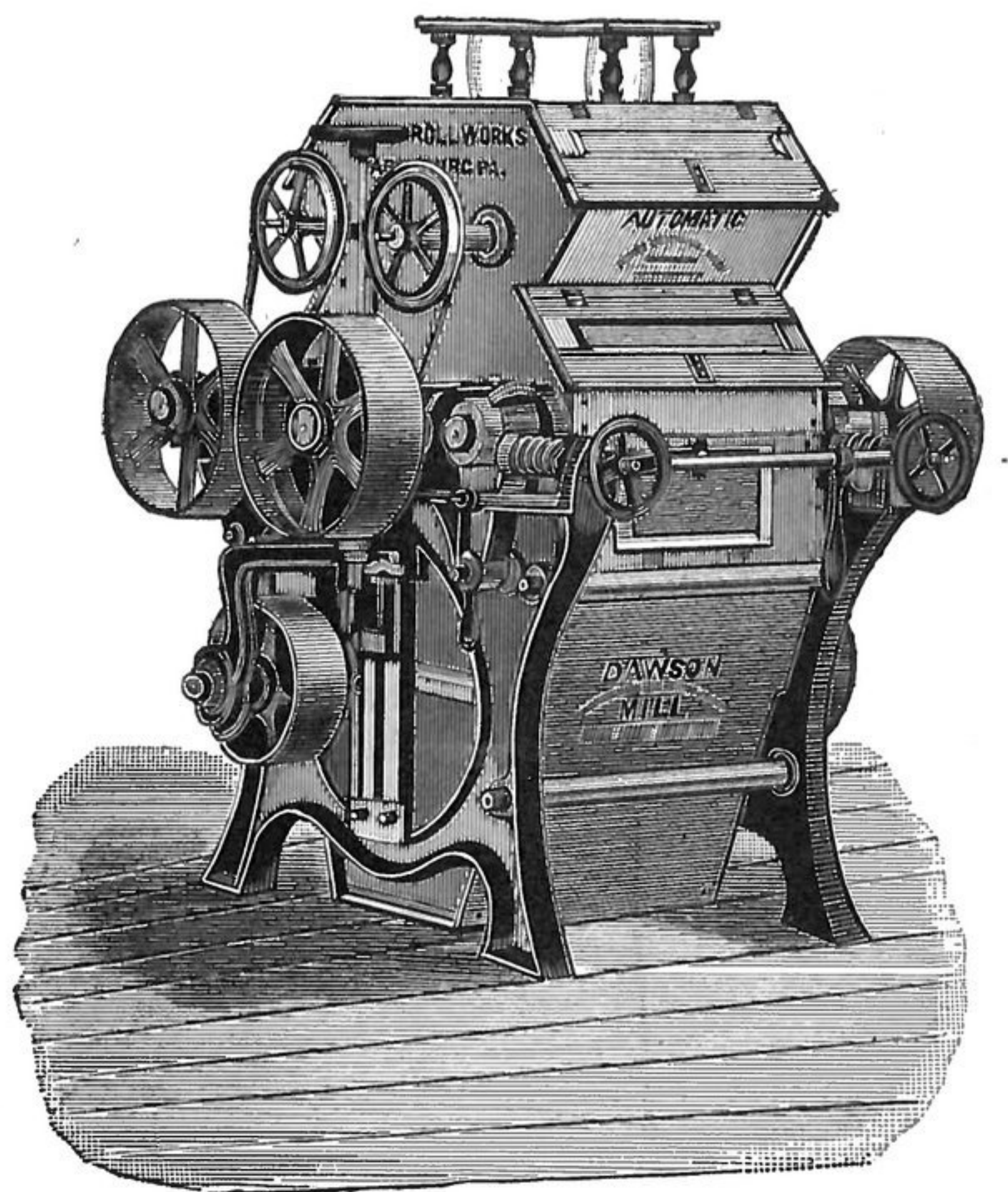
We have a large plant to Re-grind and Re-Corrugate Rolls.

Owing to our late increased facilities and central location we are enabled to ship goods promptly on the shortest notice.

PARTIES CONTEMPLATING REMODELING THEIR MILLS OR BUYING ANY ROLLER MACHINES ARE REQUESTED TO PUT THEMSELVES IN CORRESPONDENCE WITH US.

FOR PRICE LISTS AND CIRCULARS, ADDRESS,

Dawson Roll Works, Harrisburg, Pa.





PUBLISHED EVERY MONDAY. OFFICES: { Corner Pearl and Seneca Streets,
Over Bank of Attica,
McFAUL & NOLAN, - - - PROPRIETORS.
THOMAS MC FAUL. JAMES NOLAN.

SUBSCRIPTION.

In the United States and Canada, postage prepaid, \$1.50 Per Year, in advance; remit by Postal Order, Registered Letter, or New York Exchange. Currency in unregistered letter at sender's risk.

To all Foreign Countries embraced in the General Postal Union, \$2.25 Per Year, in advance.

Subscribers can have the mailing address of their paper changed as often as they desire. Send both old and new addresses. Those who fail to receive their papers promptly will please notify at once.

ADVERTISING.

Rates for ordinary advertising made known on application.

Advertisements of Mills for Sale or to Rent; Partners, Help or Situation Wanted, or of a similar character One cent per word each insertion, or where four consecutive insertions are ordered at once, the charge will be Three cents per word. No advertisement taken for less than 25 cents. Cash must accompany all orders for advertisements of this class.

Orders for new advertisements should reach this office on Friday morning, to insure immediate insertion. Changes for current advertisements should be sent so as to reach this office on Saturday morning.

EDITOR'S ANNOUNCEMENTS.

Correspondence is invited from millers and millwrights on any subject pertaining to any branch of milling or the grain and flour trades.

Correspondents must give their full name and address, not necessarily for publication, but as a guarantee of good faith.

This paper has no connection with a millfurnishing house and aims to represent the trade without prejudice, fear or favor.

Address all communications

THE MILLING WORLD,
BUFFALO, N. Y.

Entered at the Post Office, at Buffalo, N. Y., as mail matter of second-class.

SITUATIONS WANTED.

Advertisements under this head, 25 cents each insertion for 25 words, and 1 cent for each additional word. Cash with order. Four consecutive insertions will be given for the price of three.

BUCKWHEAT MILLING A SPECIALTY.

A reliable Roller Miller wants work. Can make one-third more buckwheat flour than average millers, conditions the same. Granulated meal, etc. H. N. Z., 228 James street, Buffalo, N. Y. 710

SPECIAL ADVERTISEMENTS.

Advertisements of Mills for Sale or Rent, Partners Wanted, Machines for Sale or Exchange, etc., etc., cost 1 cent per word, for one insertion, or 3 cents per word for four insertions. No order taken for less than 25 cents for one insertion, or 50 cents for four insertions. Cash must accompany the order. When replies are ordered sent care of this office, 10 cents must be added to pay postage.

WANTED.

To rent a small flour mill, roller preferred, with view of buying, or buhr mill properly located. JOHN G. DIXON, Gratiot, LaFayette county, Wis. 14

A GOOD OPENING.

A good opening is offered for an Exchange and Custom Flouring Mill at Waterville, Southern Minnesota, in the centre of the Cannon River Valley. The best wheat district in Minnesota. For further details address DAVID B. PARSONS, Waterville, Minnesota. 1417

FOR SALE.

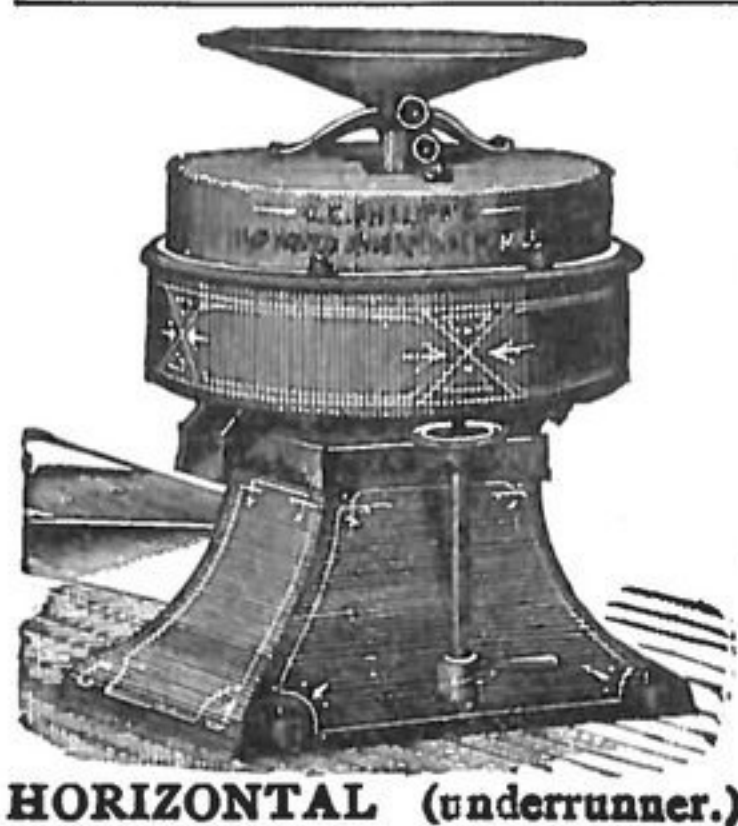
Several good second-hand and new turbines of various styles. Second-hand price list and descriptive matter and prices of our new machines sent free. Every one interested in the shortest route to successful milling on rolls or in grinding corn and feed with the least expense of power, should address us before buying.

FLENNIKEN TURBINE CO.,
Dubuque, Iowa.

8tf

MILL MACHINERY FOR SALE.

One No. 0 Standard Combined Separator, Smutter and Brush Machine; new, best make.
One 20-Inch Vertical Portable Mill, French Buhr Stone, hung on horizontal shaft; capacity 25 to 40 bushels per hour; new, best make.
One 14-Inch Vertical Feed Mill; best make, new, a bargain.
One No. 6 Dustless Separator; new, a bargain.
One No. 1 Full Rigged Combined Dustless Separator; new, a bargain.
Four Corn Cob Crushers, right or left hand, driven from above or below, best make; capacity 40 to 60 bushels per hour.
Two No. 1 Corn Shellers. New.
One No. 2 Purifier. New. Best make. A bargain.
For particulars address, FRANK SMITH, care of THE MILLING WORLD, Buffalo, N. Y. 5tf



HORIZONTAL (underrunner.)

If you are desirous of obtaining the best Mill or Cob Crusher, send for our catalogue and be convinced that our's fill the bill. Can not fail to please you. They are guaranteed to prove as represented.

C. C. PHILLIPS,
OFFICE, 20 SOUTH BROAD STREET,
PHILADELPHIA, PA.

NEVER-FAILING WATER-POWER

FOR SALE OR TO LET.

Situated at the junction of two rivers, 95 miles from New York City, on the West Shore Railroad. Mill site against track. A NATURAL ROCK DAM with from one hundred to one thousand horse power. Railroad siding on premises. Station, post and telegraph offices in sight. Factory employes to be had at low wages. Further particulars given by addressing.

HOWARD FINGER, - - SAUGERTIES, N. Y. 411

FOR RENT CHEAP.

A hundred-barrel flouring mill, and the late roller improvements, a large feed grinding trade in connection. Mill has a good exchange and local flour trade, situated on the C. and N. H. Ry. at Harvard Junction, sixty-three miles from Chicago. THE HARVARD SEWING MACHINE CO., Harvard, Ill. 1215

FOR SALE.

Our 4-run mill, water and steam power; water nine months of the year; mill lately fitted up with Aug. Heine System of Bolting. Mill is in first-class repair; also saw-mill on same dam; about thirty acres of land with the property; good stand for a roller mill, fine grain country in Central New York lake region; four miles from Lehigh Valley Railroad. Call on or address, MOSS BROS., Waterburgh, Tompkins county, N. Y. 1417

FOR SALE.

A flouring mill at Washington, Tazewell county, Ill., three run of buhrs, good engines and mill complete. Good wheat section and practically no opposition. Present value of milling winter wheat 72 to 75 cents. Coal \$2 per ton. Railroad tracks to mill. Will sell very cheap on easy terms. Apply to or address, P. B. & C. C. MILES, Room 24, Chamber of Commerce, Peoria, Ill. 1417

FOR SALE.

"Genesee Valley Mill," situated 27 miles south of Rochester, N. Y., on the Genesee River. Abundance of water power at all times. Western New York & Pennsylvania R. R. runs past its door. No carting needed; loads and unloads cars by elevators and spouting. Coal sheds, etc. Good trade. Size of main building 30x50 feet, four stories; wing 30x36 feet, two stories high. Three sets of first-class stones, one double set of rollers, all in good order. Large pump in mill to supply water for large salt block near by. Pump pays about \$300 per year. Splendid wheat country. Suitable dwelling house near by. Inquire at mill, or address, S. H. BASOM, Administrator, Alabama, Genesee county, N. Y. 1114

IF SOMEBODY'S mother-in-law is n't called upon to shell out her shekels to keep a certain self-styled monthly milling and engineering journal afloat, all guessing on that subject is as far astray as Prognosticator Prime's 1888 crop guesses. Meanwhile, take "Safe Cure."

THE experts, prophets, liars, sensationalists and pessimists predicted that the spring-wheat mills would be compelled to stop grinding during April, May and June for want of wheat. April and May have gone and June is here, and the spring-wheat mills appear to be able to find wheat enough to grind right along. Only a week ago Minneapolis was turning out flour at the rate of 114,000 barrels a week. The past year was a wearing and trying one to the prophets. It is to be hoped they are wiser now.

THE past week has brought a considerable change in the crop reports. On May 26 Winnipeg reported severe cold, 22 degrees above zero. Dakota and Minnesota went down to 26 and 27 degrees. Ontario, Canada, reported snow and ice on the 27th of May. Western New York and adjoining sections reported heavy frosts May 28th. Reports of the drouth of early May reveal more damage than at first appeared in the wheat sections. The frost killed large quantities of vegetables, and it is thought that even the wheat plant in Manitoba, Dakota and Minnesota has been hurt quite seriously by the severe cold.

A GENIAL monthly cotemporary, devoted to the advocacy of insurance, typewriters, photographic cameras, chicken, duck, turkey and goose incubators, and other more or less incidentally milling topics, refers to Mr. R. James Abernathay, one of the best-known milling writers of this age, as "a certain Missouri-short-system crank." As Mr. Abernathay's articles find wide circulation in the scientific papers of the United States, Great Britain, France, Germany and Austria-Hungary, he can probably afford to smile at the superior "ghosts" who are jumping onto him, and dancing on his carcass, while he is serenely unconscious of either their antics or their existence. If the kidneys of the editors of our cotemporary are out of order, we recommend "Safe Cure" in liberal doses. It will purify their blood, sweeten their tempers, clarify their intellects by removing all superfluous albumen, and make life one continued round of unalloyed enjoyment. Thus purified and clarified, they might even be able to look over the roof of their incubator and onto Mr. Abernathay without bitter sensations of mental gangrene. Neighbors, do not display excerebrose hebeticulous rhomboccephalic micromentality. Drink "Safe Cure."

SINGLE-WHEAT MILLING IN ENGLAND.

Professor William Jago, of Brighton, whose recent utterance on "single-wheat milling" called forth so much discussion from English bakers and millers, defines and defends his position on that subject in a communication to "The British Baker, Confectioner and Purveyor" for May, in which he says: "It is interesting to note the air of having completely settled the matter which some millers have when they parade the difficulties of separately milling wheats. There is such an air of 'Ah, if you knew all these difficulties so well as we do, you would no longer dream of advocating such foolish things as single-milled flours.' Well, perhaps some of us are as familiar with the *modus operandi* of milling as millers are with that of baking; but the baker's position as a buyer of flour is one in which he has nothing whatever to do with the difficulties of milling. It is for him to state his requirements, millers must fight it out among themselves as to the best ways of getting over the difficulties of supplying those requirements. I say again they are matters outside the consideration of the baker as such. The public, as buyers of bread, require that it shall be sweet and pleasant flavored. The baker who makes a sour or unpleasant loaf of bread will not find it much good to go to the buyer and say: 'I have such difficulty in making sweet bread, I shall have to re-clothe all my reels with new silk—no, I mean wash out my sour old troughs or replace them with new—and, further, I shall have to buy more expensive flours.' The buyer will retort: 'I want sweet bread, whether you find it difficult to make it or not; if you don't supply it, I shall go to your rival who does.'

"But on this matter of impracticability what is the verdict of some of the foremost millers of this country? In reply to letters of mine Messrs. John Ure and Sons, of Glasgow, say that they have no difficulty in supplying single-wheat flours; and they guarantee the absolute purity of such flours. I have myself handled samples of admirable spring and winter American, Australian and Azima flours made by this firm. Mr. John F. White, who was the miller of the flour to which I referred in my paper as that about which 'Mr. Thoms asserted that the best spring American patents he has ever used were milled in Scotland,' writes as follows:

DUNDEE FLOUR MILLS, DUNDEE, 4th April, 1889.

MR. WILLIAM JAGO, 32 Clarendon Villa, Brighton.

DEAR SIR: I have your favor of 2nd inst. It is my opinion that it is not scientific milling to grind wheats together, which are utterly dissimilar in their nature. You may get an apparent homogeneous or equally conditioned mixture, but when it comes to the rolls they tell a different story. Look at the bran. Besides, the component parts remain true to their character and yield different proportions of different grades of the mixture. For instance Duluth and Scotch would make a bad union, at least to a baker who wants a Minnesota flour. The gain in color would be sacrificed in strength. But what I complain of is that bakers will frequently take the mixture if cheaper. The 'Excelsior' flour I have made at Dundee from old hard Duluth is well known to you. Why did you not say that this was the flour you referred to as made 'in Scotland'? It has been stated by other well-known experts 'to leave Minneapolis far in the rear.' It is the interest of millers to satisfy their customers and to make what flour they want, if the order is sufficiently large to make it worth while, or if a certain flour suits their trade regularly. Some prefer a 'blend' specially in the ordinary runs of flour, type sorts.

JOHN F. WHITE.

"Nothing could be much stronger than Mr. White's letter, and I know of no miller who writes with greater authority. It will be noticed that he says that some prefer a blend specially in the ordinary runs of flour; that is to say, in what I have called the ungraded or make-weight flours. These blends are preferred because they are cheaper. I next come to the letter of a well-known south country miller, which I also produce in full:

MR. WILLIAM JAGO. WADDON FLOUR MILL, CROYDON, SURREY, 5th April, 1889. }

DEAR SIR: In reply to yours of the 2d inst. I have perused carefully, as reported in the milling journals, your paper read at Liverpool, 'Should British millers grind wheat separately?' with the discussion arising upon the same. In the main, I agree with some of the millers who differ from you as to the practicability or desirability of grinding wheat separately with our present arrangement of machinery; in fact, some descriptions of wheat can not at present be reduced alone with advantage either to miller or baker. There are, as you well know, a few descriptions of wheat which my firm have successfully manufactured alone, and made,

I believe, better flour by so doing than could possibly have been the case if mixed with other descriptions of wheat. I candidly believe the time is not far distant when all very hard and soft wheats will be manufactured separately, and with great advantage both to the strength and general quality of the flour, but the problem is difficult at present. I believe you are quite correct in your contentions, but your paper is 'before the time.' I am certain that a considerable quantity of flour has been made from Azima and other Russian wheat alone, and sold as such during the past year, and that it has given every satisfaction to the baker, both with regard to strength and dryness; therefore, I consider the second part of the objections raised by the dissentients to your paper is not just or correct.

CHARLES BROWN.

"It will be noticed that Mr. Brown replies with great caution and feels the difficulty of grinding some wheats separately. Again, let these go into the ungraded flours. But as Mr. Brown's single-wheat flours include Duluth patent on the one hand and this year's English wheat flours on the other, both of which I have handled in quantity, I am inclined to the opinion that whatever difficulties there are Mr. Brown finds them capable of solution. The second part of my letter to which Mr. Brown refers was a remark which I made to the effect that certain objectors asserted that those flours which are sold as single-wheat flours were not so, really being frauds on the part of those millers who offered them. My next letter is from Messrs. Eisdell and Soundy, whose Mr. Soundy was one of the most popular and successful presidents of the National Association of British and Irish millers:

ABBEEY MILLS, READING, 5th April, 1889.

WILLIAM JAGO, ESQ., Brighton.

DEAR SIR: Yours of the 2d to hand. We noticed your paper and to a degree agree with it, but only when the bakers of the United Kingdom have sufficiently studied their business to understand the vastly different nature of wheat and the consequent different treatment they require in making bread. So far as the milling of separate wheat goes, there, to our mind, is no difficulty. We have for a long time made flour from English, Russian, American, etc., and delivered them as such, with a guarantee that the flour is made from the description named only. At the present time we can offer flour made from either of the following: English, New Zealand, Australian, Indian, Russian, Hungarian and old Duluth. We send you by parcel post a sample of old Duluth patents, Hungarian ditto, Russian ditto and Russian straight. These we are selling in our regular trade. This year there appears to be little or no desire to obtain English flour.

EISEDELL & SOUNDY.

We may add to this list flour from Baltic wheat.

"There is no uncertain sound about this letter. Messrs. Eisdell and Soundy will supply and guarantee, practically, any variety of pure, single-wheat flours demanded, and only make the reservation that bakers shall sufficiently master their trade to realize the advantages of using such flours. I can speak most favorably of this firm's flours, which I have handled with advantage. Well, I think I have about finished with the 'impracticability men.' All I can say to them is, if they can't mill wheats separately, let them take a back seat and leave milling and letter-writing on it to the live, progressive millers who can and do so. Now, for our next argument about the gluten of American wheat being deficient in elasticity and improved in that particular by being mixed with a damp, soft, English wheat. I should have passed over this altogether but for the source from which it came. I think the editor of 'The Miller' must be poking fun at me for some reason or other. Such treatment may improve the elasticity of flour according to milling standards, but it doesn't according to the standard of the baker. If American flours be properly handled, I have no hesitation in saying that, used alone, they will give more elasticity than a flour obtained from a mixture of the same wheats (American) with English wheats. If these are milling ideas of the results of blending, then all I have to say is, the sooner the baker takes the blending on himself the better for him."

LADOGA WHEAT IN CANADA.

A bulletin of the Ottawa Experimental Farm gives an interesting account of the experiments made in various provinces of Canada for the purpose of ascertaining the properties of Ladoga wheat as compared with Red Fife. Ladoga wheat comes from the Ladoga lake region in Northern Russia, where the summer is short. It is claimed for this variety that it ripens early and attains a high degree of hardness and a heavy weight. The experiments have been

continued through several seasons, and the results may be looked upon as reliable. It is shown that Red Fife is about 10 days later in ripening than the Ladoga wheat. According to the experiments the average yield from each three pounds of Ladoga sown was as follows: Manitoba 38 pounds, Northwestern territories 63 pounds, British Columbia 126 pounds, Ontario 44 pounds, Quebec 50 pounds, Nova Scotia 26 pounds, New Brunswick 59 pounds, Prince Edward's Island 46 pounds. In Manitoba the highest weight per bushel was obtained, 65 pounds; the lowest weight was 60 pounds in Nova Scotia. As to quality most experts place the original Ladoga wheat in the grade next below No. 1 hard and the value at some 5 cents per bushel less than that of the best quality of Red Fife. But it appears that it has adapted itself gradually to the soil and climatic conditions of Canada, approaching and in some respects surpassing the standard of excellence attained by the famous hard wheat of the Northwest. The bulletin gives the following summary of the conclusions reached by a careful analysis of the experiments:

"The Ladoga wheat has been subjected to a searching criticism; tables of the entire results of its growth have been given, the public have been advised of such defects as have been noted during the progress of the two years' test, and, making the most liberal allowance for these defects, it seems not too much to say that the evidence thus far obtained is sufficient to show: That the Ladoga is a productive and variable variety of hard wheat, which has thus far ripened over the whole Dominion ten days earlier on the average than the Red Fife; that the better samples obtained are fully as rich in gluten as best Red Fife, and while cultivation of Red Fife should be recommended in every section of the Northwest where it is likely, with early sowing, to escape the autumn frosts, the growth of the Ladoga may be safely encouraged wherever the ripening of the Red Fife is uncertain, without incurring the risk of materially lowering the reputation or general quality of Canadian hard wheat." Considering the immense area of land in Canada which has been regarded as unsuitable for wheat raising on account of the shortness of the season of growth, the satisfactory results of the tests of Ladoga wheat are of great significance. A saving of ten days in the time from sowing to harvesting will add a handsome belt of land to the wheat-producing area and enlarge the possibilities of Canada as a producer.

TENDENCIES OF THE TIMES.

A. B. SALOM.

Conspicuous among the movements of the present time is the movement toward combination. The tendency to combine has become general. In no department of industry is it lacking. The public hears much of combination, particularly in the direction of moneyed combinations. The air is full of denunciation of trusts, pools, leagues, rings, corporations and all sorts of capitalistic and industrial co-operation. Morning, noon and night the citizen is reminded that his liberties are endangered and his comfort threatened by criminal conspiracies of moneyed men and firms and corporations, and he is urged to rise in his might and check the encroachments of the robbers before it is everlastingly too late. While all this pother is made over this one form of combination, there are countless other forms that threaten quite as serious results and demand quite as close attention by the citizen. Combination is by no means monopolized by the moneyed interests of the country. Other interests are equally concerned.

Foremost among all the combinations of this day in its power for evil, in its abuse and defiance of all the laws governing the individual and the community, must be placed the labor combination. The men who lead in this movement aim to form a combination so strong, so close, so wide-reaching, that every other interest in the land shall be at the mercy of labor. It forbids apprenticeship to American youth. Already the effect of that prohibition is visible. Accident, death, disease and disability reduce the number of skilled workers in an industry like glass-making. The supply of that labor is growing smaller by degrees as the demand

grows larger. Unable to fill the demand with laborers taught at home, the employers send abroad for laborers. The combination here steps in and, by virtue of a peculiar contract labor law passed at the request of combined labor, forbids the importation of skilled laborers under contract. The combination has fortified itself with law and proposes to hold whatever advantages it has gained. Multiply this example to cover almost every line of work, and it is possible to appreciate what is meant by the combination of labor.

Professional lines of occupation show the same tendency. Wherever there is a demand for trained effort, the trained men already in the field are ready to prevent the entrance of others into the field. Lawyers lead in this form of combination. The steadily increasing number of accessions from colleges, schools and offices alarms them. Taking advantage of their influence in shaping legislation, the lawyers of the great State of New York have secured the passage of laws that make it practically impossible for the son of poor parents, however brilliantly he may be gifted by nature, to become a lawyer. Natural fitness, freedom to choose his own occupation and the right of unhampered competition are left out of the question by this law, which brutally and inequitably reduces the situation to a question of money and to the chance or privilege of obtaining an education. Probably this is, in detail, one of the most outrageous infractions of individual rights yet recorded as the outcome of the modern tendency to combination. The philanthropic howlers, who are agitating against the combination of capitalists, may well pause and consider this particular form of combination in this particular profession.

The physicians are constantly drawing new safeguards of law and more extensive educational requirements about their profession. Those who are in the profession appear to wish to prevent others from getting in. Here, again, the restrictions are such as to act with peculiar harshness and injustice in the case of poor young men. Their inclination to the profession of medicine, their natural fitness for that profession, count for nothing. The combination has raised before them a financial barrier which they must surmount before they are allowed to enter the professional field of their choice. The pharmacists follow the physicians closely in forming a law-hedged combination about the occupation of selling drugs. The clergymen follow quite as closely in the same direction, and to-day the only men liable to be "called" to teach morality, charity, purity and religion are the men whose parents are sufficiently wealthy to support them through the long years in college now required as a part of the absolutely necessary preparation for clerical work. The grocers combine. The carpenters combine. The teachers in the public schools combine. The shoe-makers combine. Every profession and every occupation shows the same tendency.

Excuses are freely given in every case. The laborers claim that they are forced to combine to protect themselves against capitalists. Employers claim that they must combine to resist injustice by labor. Capitalists assert that without combining for mutual protection they would all be bankrupted. Lawyers frankly admit that their combination is purely selfish. Physicians base their combination on an alleged philanthropy that seeks to protect the public from dangerous quackery and ignorance. The pharmacists follow them in that claim. Every combination has its own excuse for being, and curiously, inconsistently, but wholly humanly, each combination insists that all other combinations are wrong, inexcusable, uncalled-for and dangerous. What is to be the outcome of all this endless combining is not easy to predict. Plainly, one result will be a more distinct division into distinct classes than has ever yet been seen in the United States. Naturally each hedged-in profession or occupation will assume more and more strongly marked features. Open competition and untrammelled chances being destroyed, less danger of the infusion of new blood, new brains, new muscles and new ideas will exist, and each line of effort will fall into a rut.

Can combination be prevented? Probably not so long as the interested men control law-making and thus possess the

power to legalize their own actions. The disease appears to be spreading in every direction. Countless special laws, tending to protect existing combinations and to encourage the formation of new ones, are being passed every year in every state, and as our civilization grows older, our population denser and our activities more numerous and complicated, there is to be seen on every side an unwholesome tendency to clothe government with paternal functions, to restrict freedom in important essentials and to abandon distinctly the broad principles that have for over a century been sufficient to guarantee the greatest good to the greatest number.

GENUINE MILLING POETRY.

HE'LL NEED THE DUST.

A man kin bild a roler mill,
And fill up every flore
With roles and reels,
And shafts and wheels,
And cleaners all galore;
Bran dusters, too, and pewrifiers,
With dust collectors plenty,
For I'll be cussed
He'll need the dust,
To dew it on Fore-twenty.

Kansas City "Modern Miller."

OR ELSE HE'LL BUST!

Your head is level,
Without a bevel,
On that air subjick, man!
The miller on 4:20
Will find it plenty
Only when he grinds the bran,
And the awns, and the germs,
And the crease-dirt, bugs, worms,
And the stones, and the stix
Which the farmers in-mix!
If he does it on 4:25,
He hardly will thrive!
If he averages 4:30,
His flour will be dirty!
If he climbs to 4:35,
His flour will be "alive!"
If he mounts to 4:40,
His pocket-book's shorty!
If he stops at 4:45,
With the Sheriff he'll strive!
When he gets up to 4:50,
His product will be nifty,
And grinding right there
He'll become a millionaire!

Bang, Duluth, Minnesota.

COTEMPORARY COMMENT.

In America there seems to be about as much hard fighting and cutting down prices among milling engineers competing for a contract as there is in this country; recently, we are told, a complete three-sack-per-hour roller plant, with accessories for rye and feed grinding, went at about £1300. This is cheaper than we could profitably build a similar mill in this country.—*London "Millers' Gazette."*

Reports from all the leading mill-builders show that the great majority of new mills being built are to be operated on the short system. Indeed the cases are very rare where more than three or four breaks are used. The number of mills that are changing to the three-break plan are numerous in every milling section of the country.—*Kansas City "Modern Miller."*

The floating supply of wheat is now reduced to small dimensions, and should any thing happen to mar the present favorable harvest prospects in America, France or England, a marked change of feeling might suddenly supervene, and it would be difficult to supply a sudden demand for cargoes out of the present attenuated list.—*Liverpool, England, "Corn Trade News."*

This is one of the things toward which the Millers' National Association may profitably direct its attention. A department of statistics, with ample funds at hand for the purpose of securing accurate information, would yield large returns on the investment, and we shall feel disposed to argue this matter forcefully before the millers of the country until some definite action is taken in regard to it. On general principles it is a good thing to know all about one's business that there is to know. Statistics as to surrounding conditions and statistics as to past experience may be united in such a way as to represent definite formula, which may fix a definite basis of action in the light of certain known facts.

As it is, there is no opportunity for such formula. We simply know we are making too much flour. We have no means of measuring external or internal demands. We have no means of measuring the demands outside of or in this country. We have no measure of our capacity to supply.—*Indianapolis "Millstone."*

The Executive Committee of the Millers' National Association is called to meet at the Plankinton House, Milwaukee, June 10. It is surmised that there will be some interesting dialogues. It is to be hoped that the entire milling press will be admitted to "a front seat on the ground flour" when the animated recitations begin. Well—"all's well that ends well."—*Milwaukee "United States Miller and Milling Engineer."*

Well authenticated reports of low temperature in the Manitoba country were in circulation to-day, but they had no appreciable effect. The minimum temperature at Winnipeg last night was given by the signal service office at 22 degrees. Minnedosa reported 24 degrees as the minimum, St. Vincent 24 degrees, and Prince Albert 26 degrees.—*Chicago "Daily Business," May 27.*

THE QUALITY AND THE YIELD OF FLOUR.

There are two points in flour-making as a business that receive and always should receive a great deal of attention, because they are prime factors and necessary successfully to conduct the business. Quality and yield are what the business manager of the mill is looking after, as without both it can not be made a money-making institution. I do not mean by yield that any effort should be made to convert feed into flour in trying to make barrel of flour out of from 4 bushels to 4½ bushels of wheat. Such a course is nonsensical and impracticable. Every miller should try to get out of the wheat all the flour there is in it, but no further effort should be made in that direction. Likewise the mill-owner should see that the miller is provided with the necessary machinery and facilities for getting all the flour out of the wheat. It is sometimes urged that close yields are due to a particular system; that claim is not well founded, because the most antique system will to-day, by careful milling, make the closest yield, but at the expense of quality, which really means that feed has been converted into flour, thereby lowering the quality.

Judging from that fact and other observations, it seems fair to assume that the simpler the system the better the yield, which is really true in all cases, other things being equal; but primitive simplicity in flour-making must be avoided because quality can not be maintained. Six pairs of rolls may be and are sufficient to convert the wheat of a small mill, 50 barrels or less, into flour; but in addition to that there must be facilities for thoroughly separating the flour from the offal, otherwise there is a loss in yield. There must be reels and purifiers in full degree. All millers appreciate that fact, but many of them think a bran-duster and a dust-collector unnecessary, and so continue to run their mills without them. They are not necessary to high grades of flour, but are to yields. So far as is now known, it is impossible entirely to separate all the flour from the bran without a good bran-duster, and consequently as impossible to make as close yields without a bran-duster as with one. If it becomes necessary to make close yields, and it certainly seems to be always necessary, and more especially when the prices of wheat and flour are high, the owners of the mill must provide the appliances required in making close yields.

As to how much flour can be made out of a bushel of wheat, there seems to be a great diversity of opinion and of practice as well, if we are to believe the many statements that are made on the subject. Some claim to have made flour with 4¾ bushels of wheat to the barrel, while others say it requires as much as 5 bushels to the barrel. When as much as 5 bushels to the barrel is required, the wheat is not of the best grade or else the mill is deficient in machinery for cleaning up and saving the flour. The wheat of which are required but 4¾ bushels to the barrel must be of extraordinary quality. None of it has ever been seen by the writer, and to be frank about it, I seriously doubt the truth of all such state-

ments. When wheat is of good variety and weighs from 58 to 60 pounds as received from the hands of the farmers, it should require anywhere from $4\frac{3}{8}$ to $4\frac{1}{2}$ bushels to the barrel of flour, depending on the completeness of the mill. With wheat weighing above 60 pounds, $4\frac{3}{8}$ or less, with a full rig and careful milling, will make a barrel of flour. Business calculations based on yield of that kind may be considered reasonably safe, but if on the wild claims to which I have referred, they would be absolutely unsafe, and the mill-owner foolish enough to do it would surely get left.

With yields ranging from $4\frac{3}{8}$ to $4\frac{1}{2}$ bushels to the barrel, and with the right kind of a mill, practically straight flour can be made that will equal the average of the best flours that go into any market. What is meant by a practically straight grade is anywhere from 80 to 90 per cent. of the whole of the flour output. When only 80 per cent. of first quality or of the practically straight grade, the remaining 20 per cent. will be of a high order and command a ready sale at good prices, while the 80 per cent. will be of the very best quality and will command the highest market price in any market. Ninety per cent. can be made of a very superior quality which will equal the average of the best in quality and price, but the 10 per cent. will not be worth as much as will the 20 per cent. made the other way, and consequently it would seem more business-like to make the grades 80 per cent. and 20 per cent. respectively. It must not be supposed that all kinds of wheat will make the very best quality of flour. The best wheat, other things being equal, will make the best flour, but wheat weighing less than 58 pounds may make whiter flour than other wheat weighing 60 pounds and upward.

The softest varieties of winter wheat usually make the whitest flour; there are exceptions where the order is reversed; as for instance, Mediterranean, which is a hard winter wheat, will make whiter flour than Fultz, which is a soft winter wheat. Hard wheat flours are supposed to be the strongest, or at least that claim is made for them by the admirers of hard wheat; and while I think it is perhaps true that the best of hard spring wheats will make stronger flour than ordinary soft winter wheat, it is still doubtful whether hard winter, other than Mediterranean, will make any livelier or stronger flour than good varieties of soft. There can be no doubt of one thing, and that is, the nearer a winter wheat flour approaches to a strictly or 100 per cent. straight, the stronger and livelier it will be. For that reason every effort should be made to get as near 100 per cent. as possible by thoroughly cleaning and re-cleaning all the flour stock during the process of reducing to flour. If the appliances are not at hand for doing that, or if at hand and, for other reasons, it be found impracticable to re-clean soft stock, then it will be better to follow the plan of about an 80 and 20 output. No effort should be made in any properly arranged mill to make patent flour, because the 80 per cent. of straight will beat it in strength and equal it in color in all cases, same kind of wheat being used and other conditions all equal. The writer demonstrates that fact every few days by a careful doughing up of straights and patents.

One very marked difference is that the patent, as a rule, requires a great deal more work and much longer time to work it into a smooth and highly ductile dough than does the straight. When the work is completed, the homogeneity and ductility of the straight dough are superior to those of the patent. That fact is further proved by exposing the two doughs side by side to a moderate heat, either in the sun or in a heated room. The straight dough will assert itself much quicker than the patent and show its strength by puffing up, or what is called, when yeast is used, rising. Then, too, it will rise higher than will the patent. A short time since I proved that in another and more positive way. I took a baking sample of patent, and a first-class patent, too, together with a sample of straight, to a first-class bread-maker and had the two treated alike. Both were winter-wheat flours and were baked in the same pans, a loaf of each in the pans. The result was that the straight flour made the largest or highest and most spongy loaf, thus fully confirming the doughing experience. The baker fur-

ther reported that on account of the straight flour coming up so much quicker than the patent, it would be impracticable, as a rule, to bake them together, for fear of the straight spoiling before the patent was ready for the oven, thus confirming the other point.—R. James Abernathy in "The Mechanical News."

THE MILWAUKEE CONVENTION.

Following is the official announcement of the programme of the convention of the Millers' National Association, to be held in Milwaukee, Wisconsin, in June, sent out by Secretary S. H. Seamans, of Milwaukee, under date of May 13:

The annual convention of the Millers' National Association will be held at Milwaukee, Wis., on the 11th, 12th and 13th of June next, with head-quarters at the Plankinton House. Separate meeting places will be provided to the extent required for spring and winter wheat millers, and it is desired that all sectional and local organizations, as also individual millers who appreciate the advantage of association, attend and by counsel and presence in numbers do their fair share towards improving the milling business. The usual reduction in railroad fares will be arranged, and three or four days in the beautiful and hospitable city of Milwaukee, during the most delightful season named, can be pleasantly as well as profitably employed. The executive committee will meet on Monday, June 10, at the Plankinton House. The following have been suggested as appropriate subjects for consideration:

1. Organization to include as National:
 - (a) The spring-wheat mills organizations.
 - (b) The winter-wheat mills organizations.
 - (c) Foreign and domestic crop information exclusively for members.
 - (d) Delegation to international congress of millers.
 - (e) Reform of export bill of lading.
 - (f) Order bill of lading.
 - (g) Sales only for cash.
 - (h) All flour to bear maker's name and location.
 - (i) Form of domestic sale contract.
 - (j) Methods of sale and rates of commission or brokerage.
 - (k) Reports on standing and conduct of buyers and brokers.
 - (l) Wheat inspection and elevator customs.
 - (m) Uniform weights of sack packages.
2. Limiting production.
3. Establishing from time to time minimum prices.
4. Systematic canvass to induce millers to join respective associations.

If the result of intelligent discussion on these and other matters which may be presented take the shape of agreements binding individuals, rather than as heretofore mere expressions by resolution, the effect of our meeting can not fail to be beneficial to the milling business.

C. H. SEYBT, Prest.

S. H. SEAMANS, Sec'y.

ALEX. H. SMITH, Chairman Ex. Com.

SPECIAL NOTICES.

LIBERAL OFFER.

With a view of increasing our subscription list, we will send a copy of R. J. Abernathy's new book, "The True Short System" (Price \$2.00) and "The Milling World" for one year at the very low price of Two Dollars. Renewal will be treated same way. This offer will only continue for a limited time. Now is your chance. Send in your subscriptions at once.

Address,
THE MILLING WORLD, BUFFALO, N. Y.

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Do not order your cloth until you have conferred with us. It will pay you, both in point of quality and price. We are prepared with special facilities for this work. Write us before you order.

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ALSO MANUFACTURERS OF

Shafting, Pulleys, Hangers, Coupling, Machine and Jobbing, Etc., Etc.



ELECTRIFIED STEAM.—Helmholtz has shown that if an invisible jet of steam be electrified or heated, it becomes visible with bright tints of different colors, according to the potential or the temperature.

GENERAL NOTES.

SINCE the 3 per cent. bonded debt was extinguished and the Government began buying 4s and 4½s, less than two years ago, the Treasury has bought more than \$168,500,000 of bonds, paying for them nearly \$195,000,000. As only about \$148,500,000 of 4½ per cent. bonds now remain outstanding, it is evident that at the rate of purchases carried on for two years past the Treasury Department would be able to purchase the entire amount of 4½ per cent. bonds at a fair premium considerably before they fall due in 1891.

MILLING PATENTS.

Among the patents granted May 21, 1889, are the following:

Jas. R. Creighton, Altoona, Dak., No. 403,519, a grain-weighing apparatus.

John Johnston, Neenah, Wis., No. 403,675, a flour-bolt.

Heinrich Seck, Dresden, Saxony, Germany, No. 403,701, a dust-collector.

Phares R. Grabill, Millersburgh, Pa., No. 403,748, a grain-weighing scale.

John Johnston, Neenah, Wis., No. 403,757, a flour-bolt.

Orville M. Morse, Jackson, Mich., No. 403,770, a dust-collector.

Wilhelm Trautmann, Berlin, Germany, No. 403,798, a dust-collector.

Robert Miller, Hebron, Neb., No. 403,852, a fanning-mill.

Heinrich Seck, Dresden, Saxony, Germany, No. 403,863, a sifting-apparatus.

POINTS IN MILLING.

NOTWITHSTANDING the abundant opportunities enjoyed by young men, now learning milling in American mills, to post themselves thoroughly on the scientific side of their occupation, many of them content themselves with merely the practical work of pouring in the grain, adjusting the machines and "letting her go, Gallagher." They come out, after serving their time, ordinary "help," in too many cases only the most ordinary of ordinary "help" at that. Every one of them aspires to become a manager or a superintendent, but only the select few ever reach the best positions, because it is only the select few who are willing to study their occupation thoroughly while they are working at it.

THE learner should begin his study of milling just as the learners in other occupations begin. Among the things the miller should learn are the make-up of the wheat berry; the relation of the floury to the non-floury parts of it; the elements that constitute strength in it; the chemical as well as the mechanical constitution of the grain; the best grains for specific requirements; the highest percentage of flour obtainable by the most nearly perfect machinery operated on the best grades of grain by the most competent miller. Then he should study mechanics far enough to enable him to understand thoroughly all the machines and forces he is called on to use. He should familiarize himself with the motive power of the mill, whether water or steam, to such an extent that he may appreciate fully the best methods of utilizing the power and be able to select intelligently his machines for the transmission of the power. He should leave no portion of the plant unstudied. There are books, pamphlets, milling journals and scientific works always ready to help him to fit himself thoroughly for work in the most exacting positions, and in

these days it is generally the young miller's own fault if he comes out of his apprenticeship a mere drudge, depending on brute force and really only an unskilled laborer, instead of coming out a well-trained, thoughtful, intelligent, efficient miller.

RECENTLY I met a young miller who had just completed his service as a learner and was on his way to take a responsible position in an important mill. He was describing to me the difficulties he had encountered in learning his work. One miller, to whom he applied, knew absolutely nothing about his business beyond the barest practical work of converting wheat and rye and corn into flour. Several others knew quite as little and cared less. The learner did not succeed in getting into a mill where any thing like education was possible. One old dusty advised him to "leave off quizzing and stick to work, and he would come out all right." Another could not tell him how to determine yields. A third could not decide how much he was making or losing on a thousand bushels of grain. Everywhere he found the men, from whom he would naturally expect to learn all about the business, unable to give him any but the smallest assistance in the theoretical and scientific part of the business.

WISELY he determined to post himself. What he could not find out from the older millers, with whom he came in contact, he sought in milling journals and books. He worked hard, studied hard and is now a thoroughly competent man in a respectable and important position, drawing a good salary and in a fair way to make his mark in the fraternity. He modestly withholds permission to name and locate him, which I would like to do for the benefit of other learners in the same line. Readers of THE MILLING WORLD will probably hear from him in the near future.

How many millers have a milling library? How many flour-makers are aware of the existence of books and periodicals that would materially assist them in their labor by giving them the benefit of the experience of others? If there is any occupation which more than another calls for intelligence and wide information, it is milling. Every day I hear of millers attempting this or that particular thing, wasting time, labor, attention and money on impossible things that have been attempted by others before, whose failures are recorded. These men, were they well informed concerning the history of milling evolution, would know better than to waste their efforts and time. Millers should read, so that they may know in what directions endeavor and experiment will be vain. Many a half-taught genius wastes a year or five years on a point that has cost some former half-taught genius a year or five years of labor to achieve a failure. Could the present ignorant experimenter avail himself of the knowledge of the failure of the past ignorant experimenter, he would save himself much useless, profitless trouble. Read what former millers have done and failed to do. It will clear your minds of cobwebs and save you from crankism and hobbyism.

THE miller without knowledge of what has been done by other men in his line is generally a miller without valuable ideas, and he will generally be found among the first to suffer from any revolution in his trade, and among the last to reap any benefit from improvements in it. The ignorant, prejudiced miller was "left" a few years ago when the roller revolution came, and he is just now pulling himself together, like Rip Van Winkle after his long sleep, and trying to edge back into the procession. You will find him remodeling his old buhr-mill, which was silenced years ago by the neighboring roller mill, and making inquiries concerning modern ways of making flour. If he lives long enough he may catch up, but he will never be able to recover what he lost by his long sleep. The procession is always on the move. Stay in the line and work for a front position.

PROTRACTED snow and cold rains have left the wheat plant thin, weak and unwholesomely yellow in many parts of the best winter-wheat section of Austria-Hungary.

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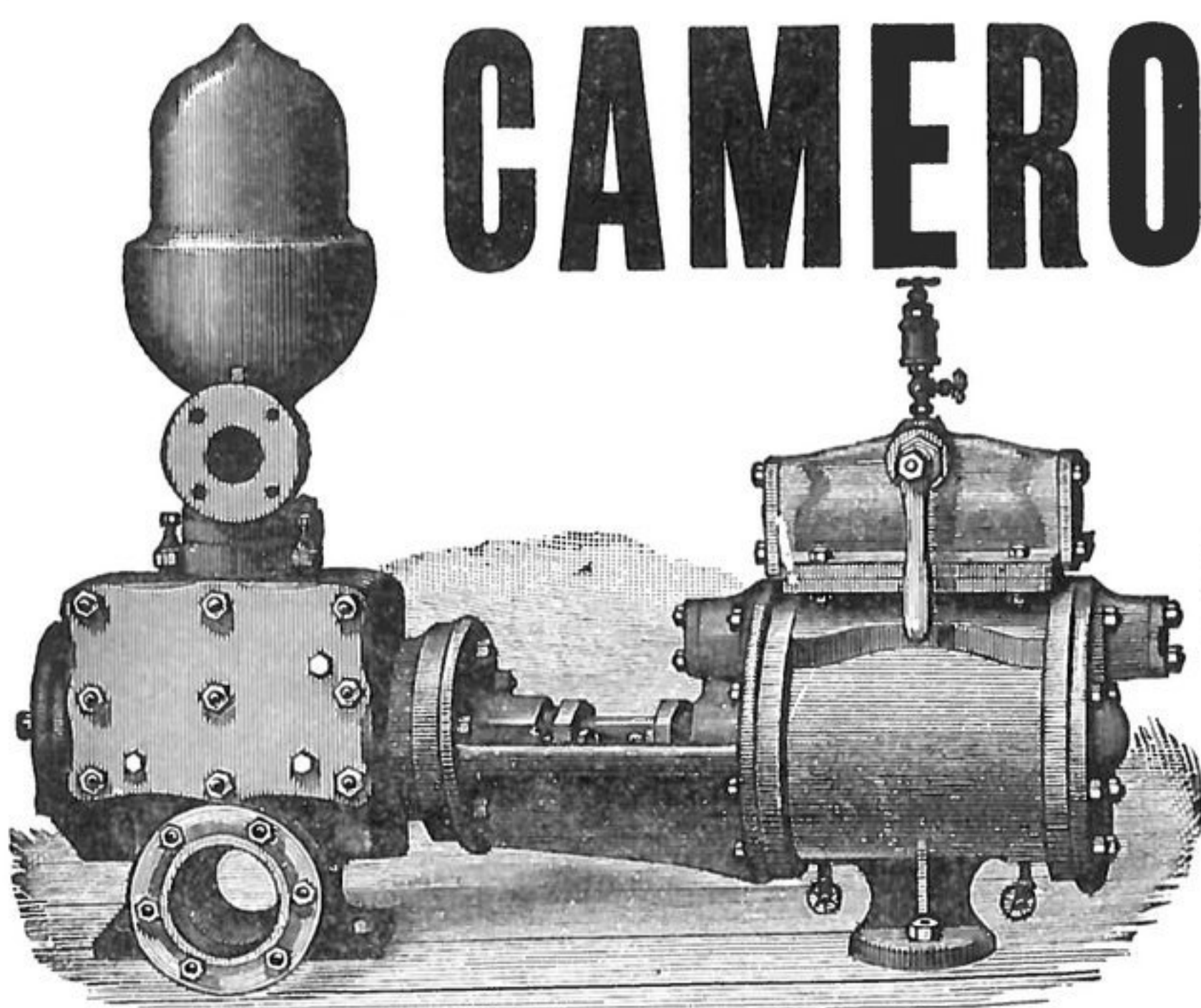
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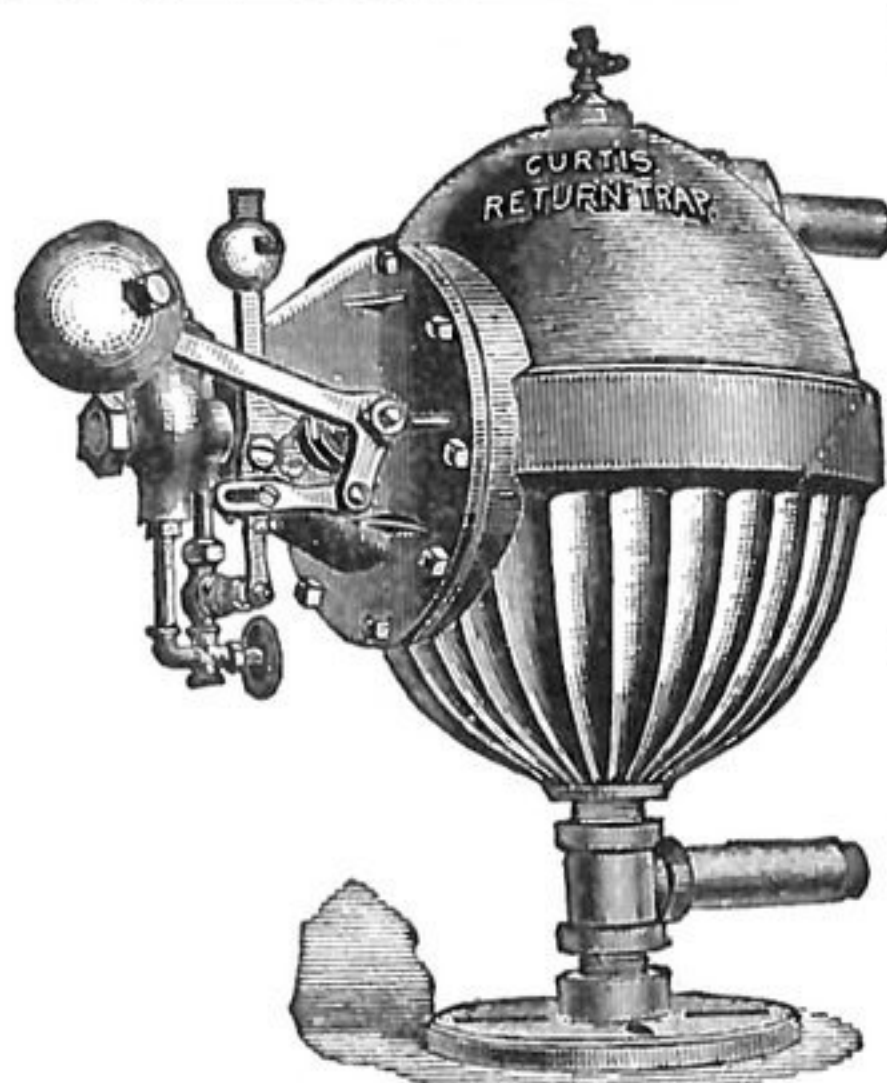
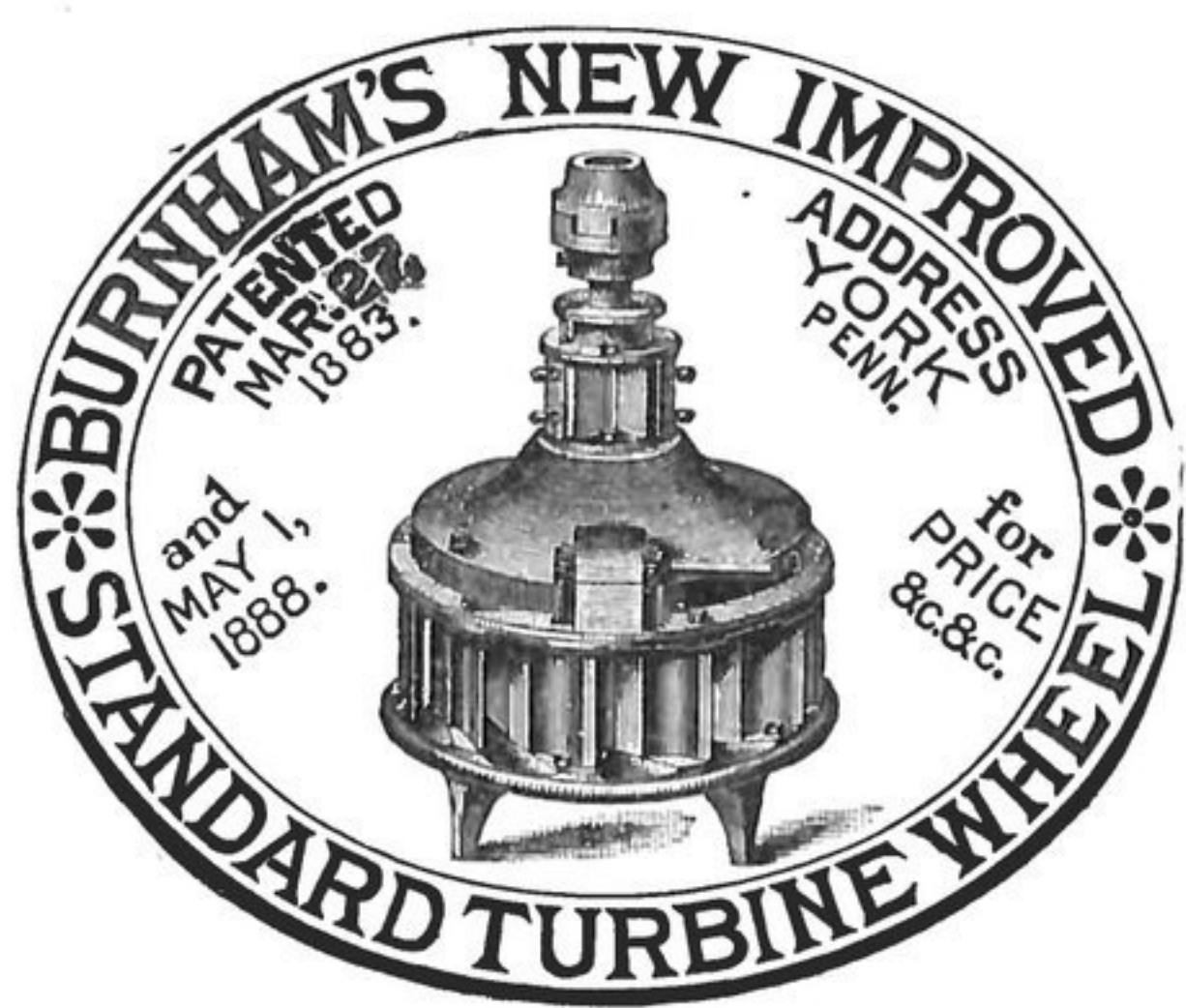
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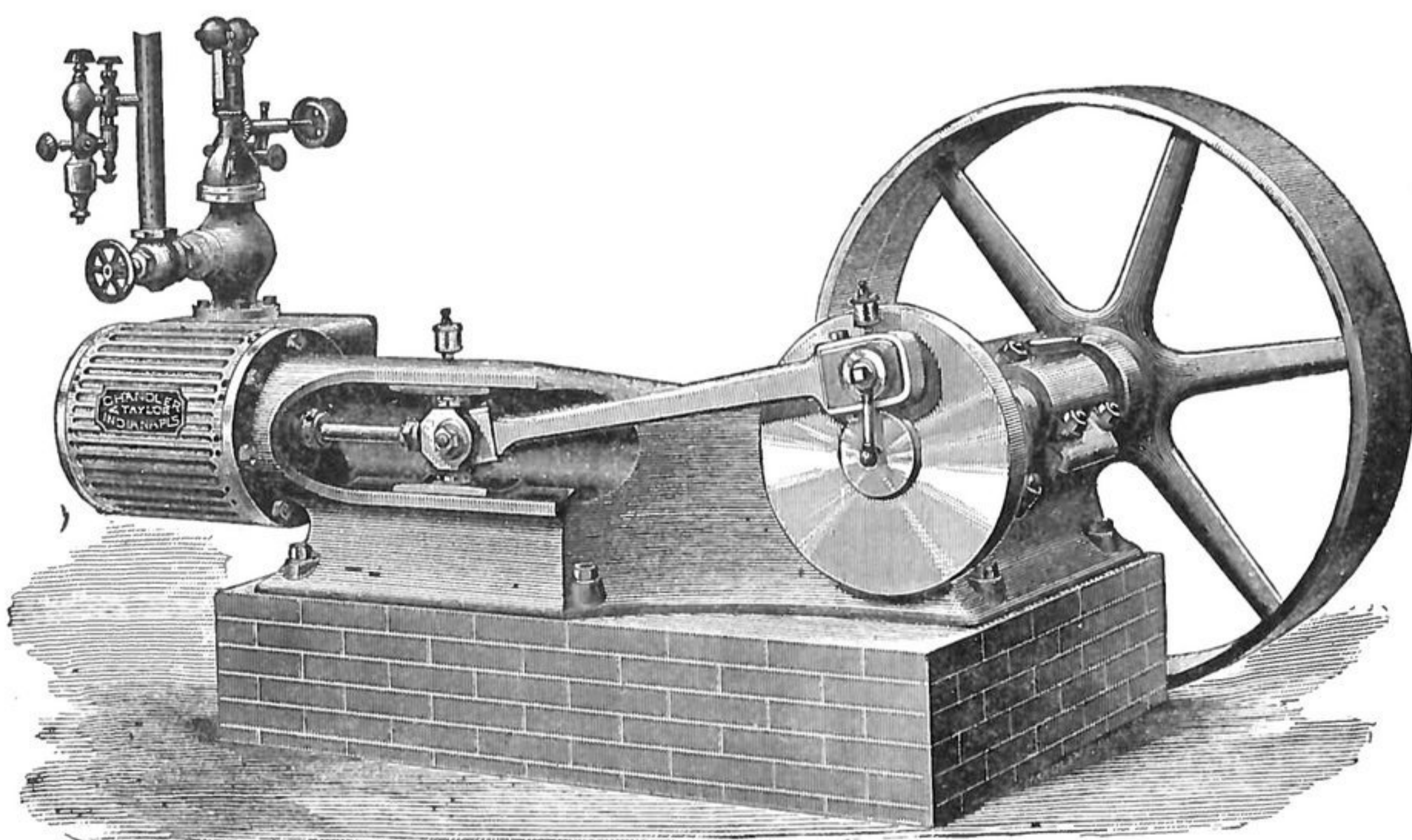
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NOTES & NEWS

S. Pike, Pikesville, N. C., builds a grist-mill.
 H. Runge & Co., Cuero, Tex., built a grist-mill.
 L. B. Weisenburg, Frankfort, Ky., puts in rolls.
 C. S. Brown, McPherson, S. C., built a grist-mill.
 N. & H. Fries, Salem, N. C., improve their flour-mill.
 Mr. Humphries, Bainbridge, Ga., started a grist-mill.
 The Home Mill Co., Home, Tenn., add new machinery.
 N. Shelverton, Apison, Tenn., wants corn-mill machinery.
 Thos. Rogers, Concord, N. C., wants grist-mill machinery.
 Greensboro, N. C., men project a flour-mill stock company.
 Halsey & Bayson, Galveston, Tex., want hominy machinery.

Cunningham & Kitzmiller's mill, near Camden, Ind., burned; loss \$7,000.

D. S. Ridelshemer's grist-mill, Monroeville, Ind., burned; loss \$10,000; insurance light.

Hicks & Cooper, Greenway, Ark., want machinery for a 30-barrel roller flour-mill.

The Northern Pacific R. R. Co's 60,000-bushel elevator, Davenport, Dak., burned; loss total.

Thos. Strauss, miller, Allentown, Pa., has had executions amounting to \$41,000 issued against him.

Fisher, Tex., formed a \$10,000 stock grist-mill company; they build at once and want machinery.

Davenport & Branford, Owensboro, Ky., increase the capacity of their flour-mill to 150 barrels a day.

Mary A. Rice and others, Paxton, Ill., incorporated the Rice Grain Elevator Co., capital stock \$50,000.

Carroll & Barclay's flouring-mill, Adairsville, Ky., was fired by lightning and burned on May 30; loss \$20,000; insurance \$12,000.

The Spanish-American Light and Power Co., of Havana, Cuba, have completed their new plant, which is now in very successful operation. The power consists of one 13 & 22x13 (125 H. P.), and one 10 & 18x10 (65 H. P.) Westinghouse Automatic Compound Engines.

The great "Tarzuela" at Madrid, Spain, which is the largest theater in the kingdom, has recently introduced a complete installation of electric lighting, under the supervision of Mr. L. Delannoy, mechanical engineer, of Barcelona, a 12 and 20x12 Westinghouse Automatic Compound Engine, built at Pittsburgh, being used as the motor.

A little over a year ago the Reliance Gauge Company, of Cleveland, O., leased a three-story block in which to manufacture their Reliance Safety Water Columns. This was expected, when leased, to be ample for the business for at least five years. Some idea of the way it is growing may be had from the fact that they are already putting up an addition to the block.

On the Pacific coast there has been some excess of rainfall, but not enough to cause any serious inconvenience, and the condition is still considerably above the average. The production of wheat on the coast for the past three years has been as follows:

	1888, bu.	1887, bu.	1886, bu.
California.....	28,450,000	30,430,000	36,165,000
Oregon.....	14,548,000	16,100,000	11,133,000
Washington.....	9,006,000	8,575,000	8,345,000
Total.....	52,004,000	55,105,000	55,643,000

The Westinghouse Machine Company, of Pittsburgh, Pa., is fitting up a new machine-shop, for large work, on the east side of Twenty-fifth street and Liberty avenue. A very large new planer is already erected and in operation, and a large new cylinder boring machine of special design is

now in process of construction, with the delivery promised for June 1st. Other large tools will be added. The new shop is rendered necessary by the Company's heavy run of orders for large compound engines.

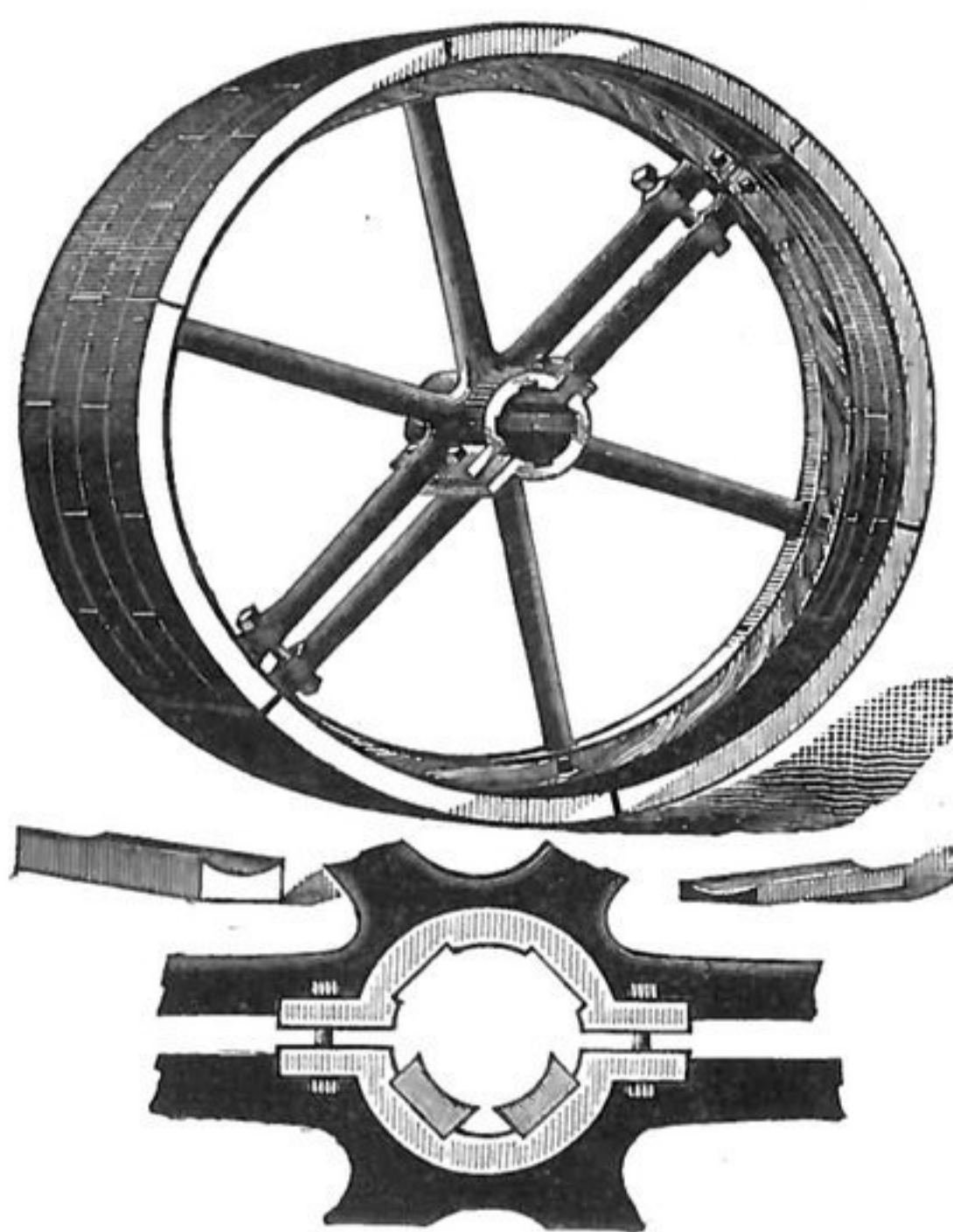
The last two years' experience in the northwest was that in 1887 the straw was 60 per cent. of a full crop and the yield of wheat was 100 per cent., while in 1888 the straw was 100 per cent. and the wheat yield 60 per cent. Straw is by no means a correct or even approximate measure of yield at all times. Wheat headed so near the ground in parts of the Red River valley in 1887 that 50 per cent. of a crop was claimed for it, and the same field yielded 20 to 35 bushels per acre.

Although the month of May, 1889, will not go down into history as an unusually prosperous one, from a business standpoint, the Westinghouse Machine Company report orders received for the first 21 days of the month, as follows:

Westinghouse Automatic Compound Engines,.....	17; 1885 H. P.
Westinghouse Standard Automatic Engines,.....	19; 745 H. P.
Junior Automatic Engines,.....	30; 745 H. P.

21 days totals,..... 66; 3375 H. P.

Says the Buffalo Commercial Advertiser of May 29: Much has been said as to the merits of the crop of hard Duluth wheat of 1887 and the superior quality of flour produced from it, but nothing has shown the wisdom of our millers in purchasing all of this wheat they could lay their hands on so much as the following transaction just closed between the largest milling concern in this city and a firm of heavy flour dealers in Chicago: A few weeks ago Messrs. Schoellkopf & Mathews received a letter from Messrs. Rockwood Bros., of Chicago, asking for a sample of their old No. 1 hard wheat flour. It was sent, and last week a letter was received from the same firm stating the flour was fully up to the standard required, and negotiations were entered into resulting in making Messrs. Rockwood Bros. agents for the "Niagara Falls" brand of Schoellkopf & Mathews' mills. The letter stated further that they had been using the best flour made by Minneapolis mills for 10 years past, but this year the quality had been found inferior, and that their correspondents, who are the fancy grocers of New England, had recommended Schoellkopf & Mathews. The Chicago house has sent to their customers a handsome card in which the merits of the old No. 1 hard are fully set forth and the Buffalo product placed above either of the "world-renowned" Minneapolis brands. But the most astonishing fact about the shipping of flour is the great competition and the heavy freight charges which this flour must meet in entering Chicago. All Minneapolis flour shipped east by rail comes through Chicago, paying 30 cents per barrel to Buffalo. Of course Buffalo flour has to be shipped back to Chicago, making a relative disadvantage of 60 cents against us. In addition to this 60 cents Schoellkopf & Mathews' price is 25 cents above any Minneapolis flour, making the cost in Chicago at least 85 cents higher than the best Minneapolis flour. To be able to compete with the great northwestern millers at this enormous disadvantage is something unheard of in the history of the flour trade. The trouble with the new wheat flour is only commencing. When warm weather, the crucial test for new wheat patent flour, sets in, the dissatisfaction, now only cropping out in sections where the temperature has been higher than that prevailing in Chicago, will become general. The complaint with the Minneapolis flour is one that can not be remedied. Choice new hard wheat is so scarce that a difference of fully 19 cents is made between it and Northern in that market, and old can not be had at any price, in short of sending to Buffalo for it. They are, therefore, using $\frac{1}{4}$ new No. 1 hard, $\frac{1}{2}$ No. 1 northern and $\frac{1}{4}$ No. 2 northern in making their best brands. The latter grade, it may be mentioned right here, is running so poor at Minneapolis that it is hardly considered good chicken feed here. Our millers were first to discover that the crop of spring wheat of 1888 was greatly inferior to that of 1887, owing to the blight and frost, and with the heavy purchases made last year the supply on hand to-day is sufficient to keep the rollers going until the new crop is fit to grind, which will not be until snow flies. Not a handful of new hard Duluth or Minneapolis wheat can be found in our large mills, and the enviable reputation of producing the highest standard of spring wheat flour will therefore be maintained by the Buffalo millers.



BIRD & CRANE MFG. CO., KALAMAZOO, MICH.

MANUFACTURERS OF PATENT

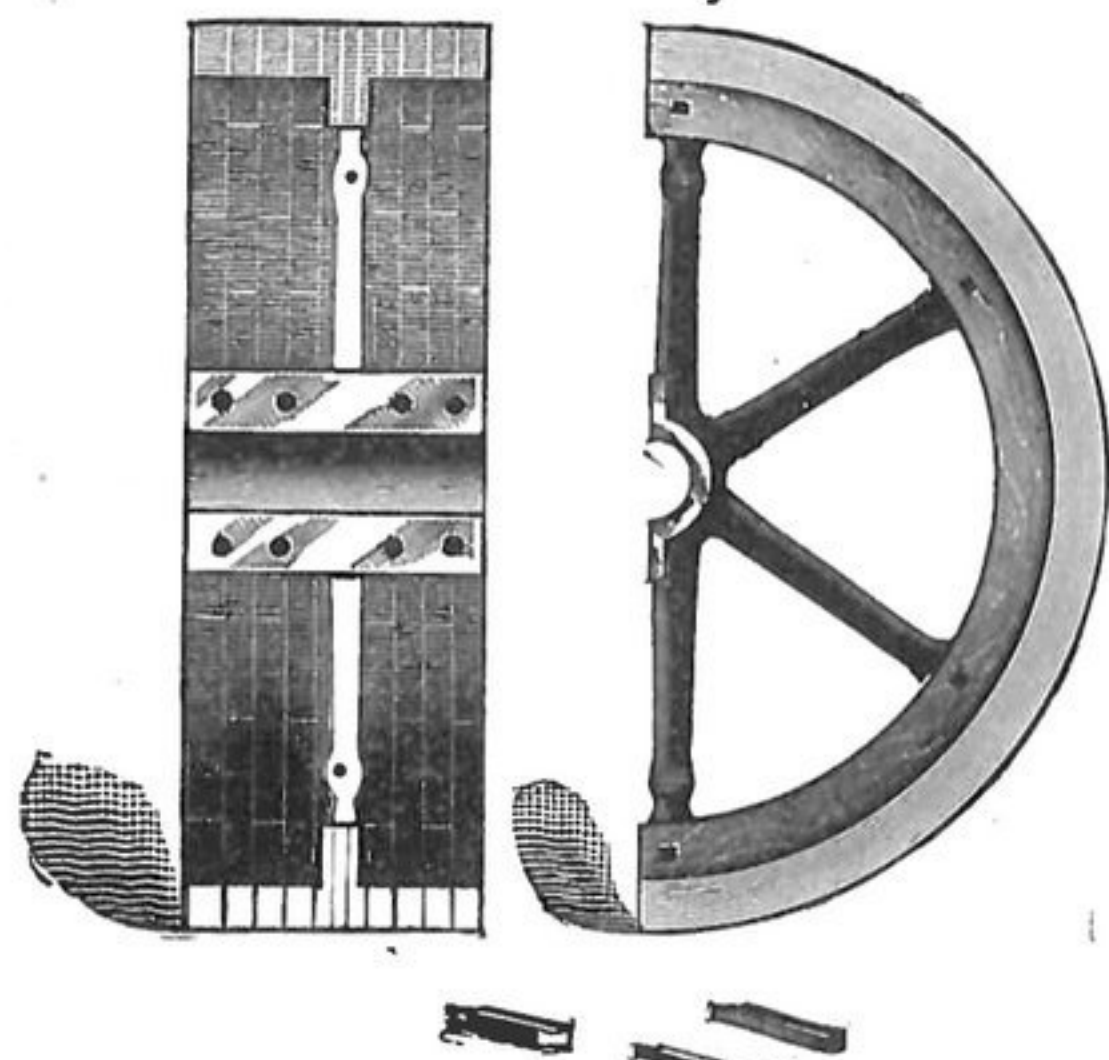
Wood Split Pulleys

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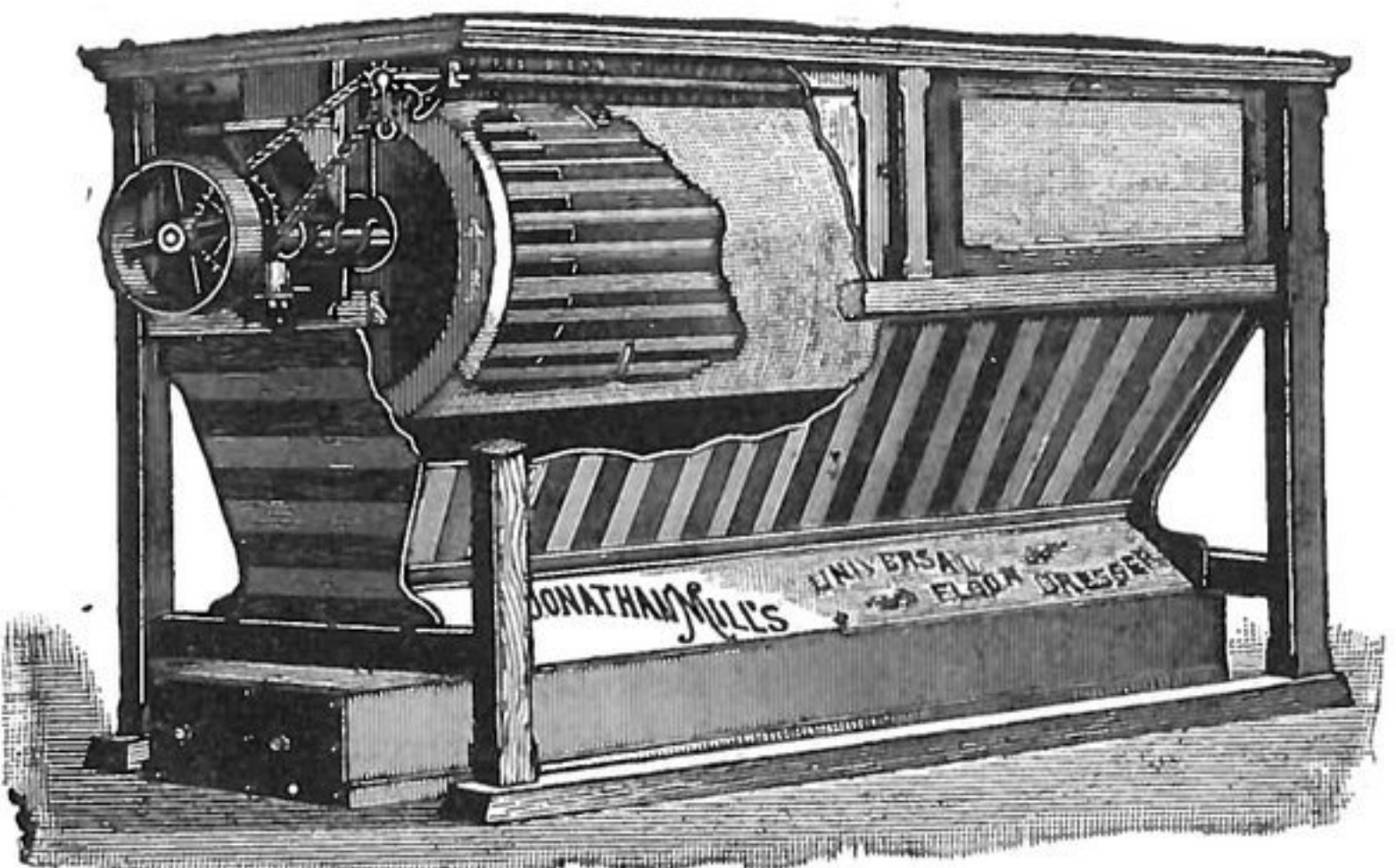
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Is very easily and quickly adjusted to Shaft. Has Patent Iron Bushings Interchangeable, to Fit Different Diameters of Shafts. Has FOUR or SIX Bearings on Shaft. This fastening never slips. Every Pulley strongly built and perfectly balanced.

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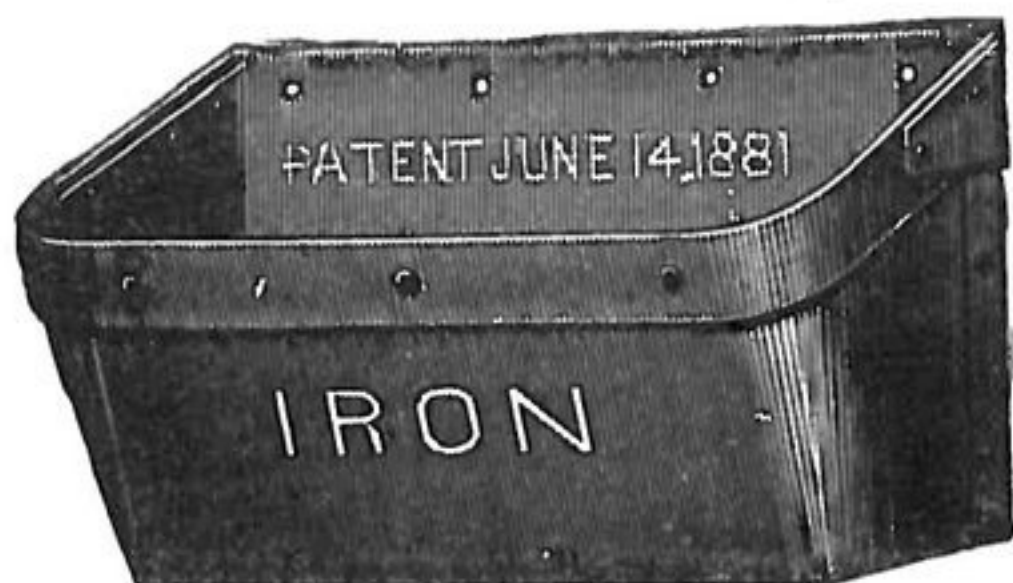


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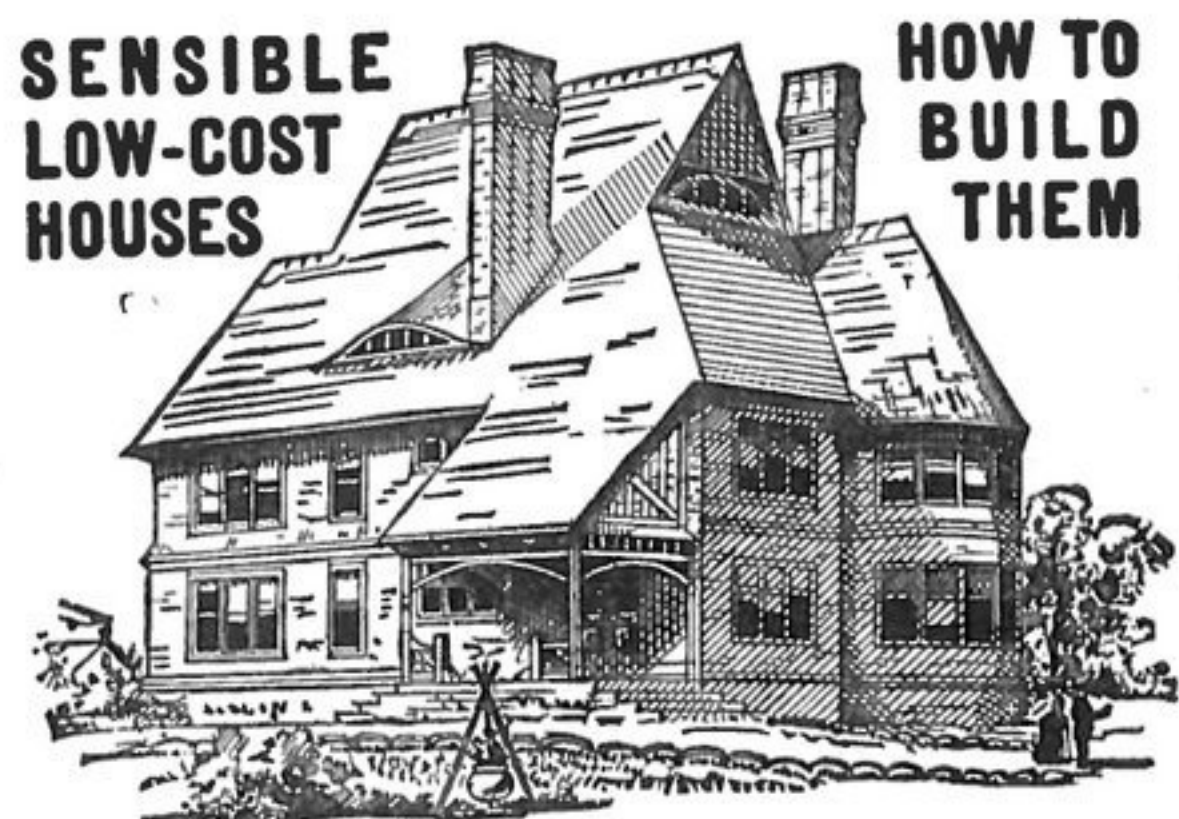


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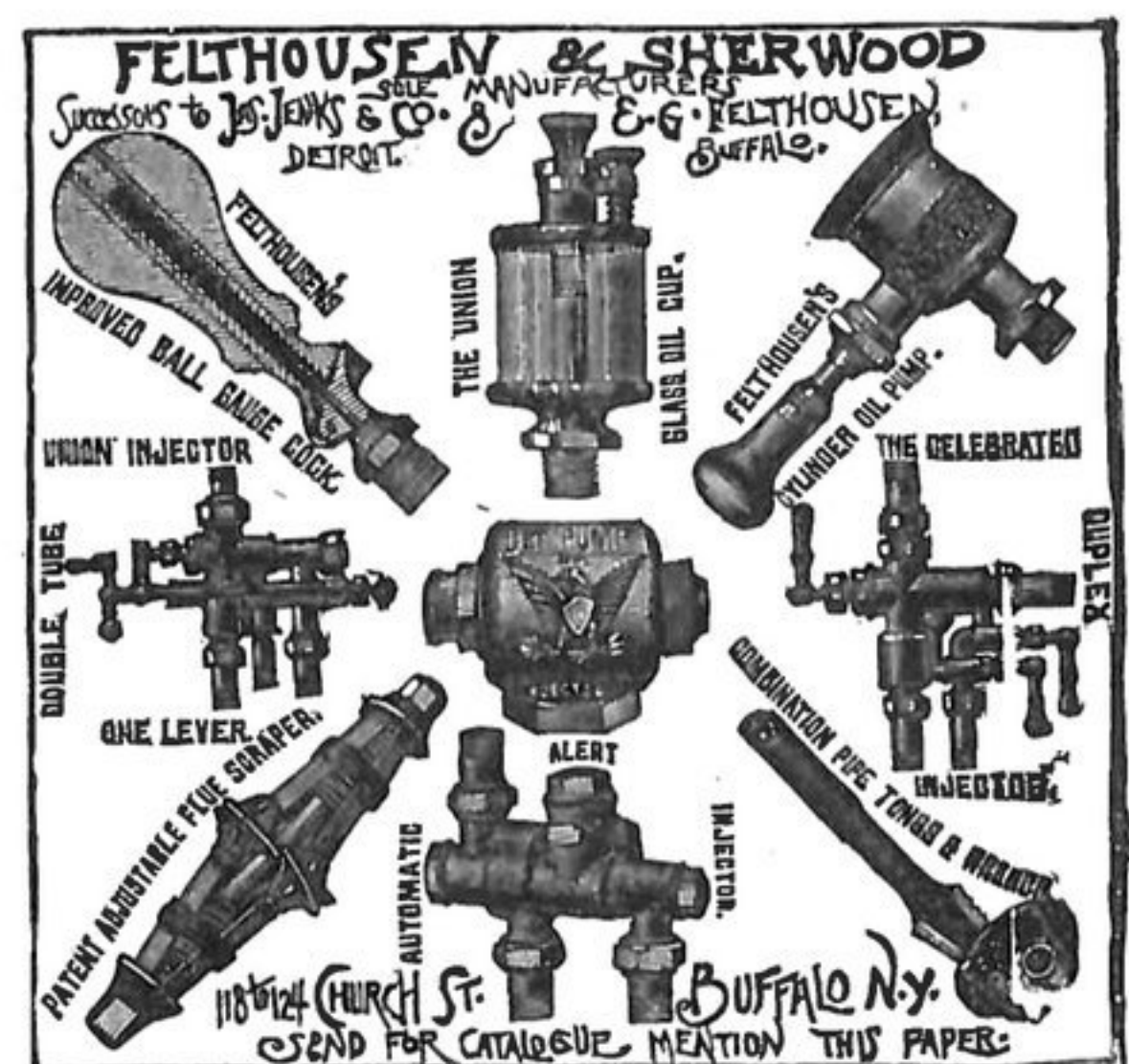
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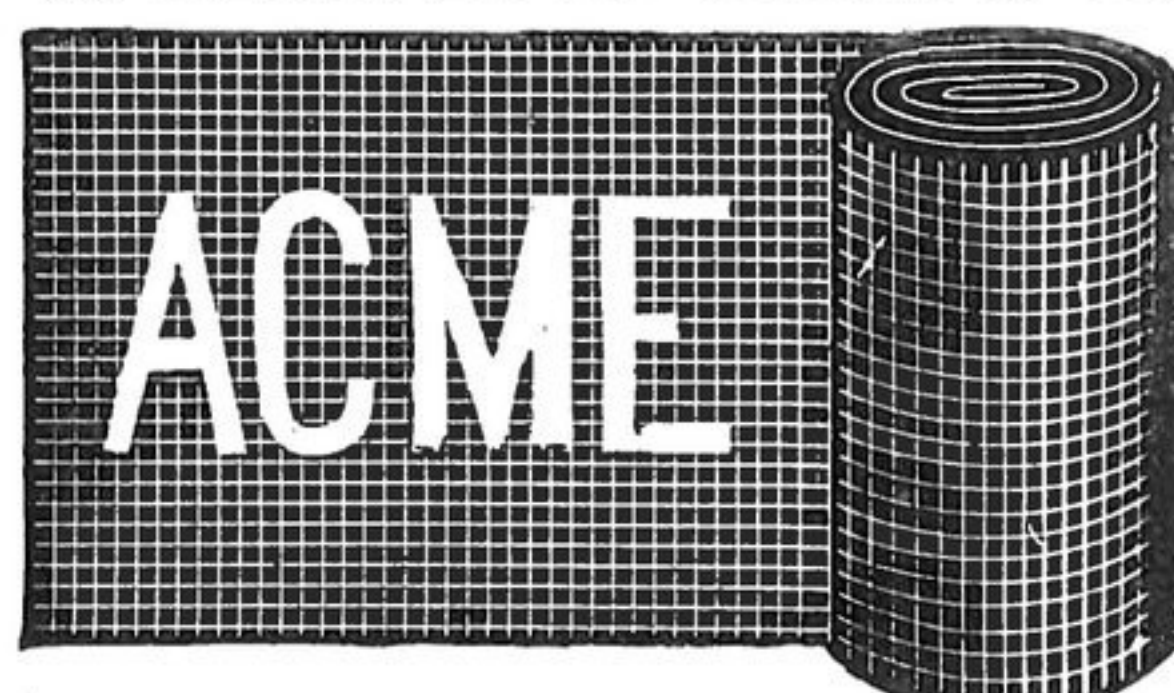
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EUROPEAN ECHOES.

AUSTRO-HUNGARIAN wheat-exporters are complaining that inferior Roumanian wheat is sold in various European markets as Hungarian grain. They claim that the misrepresentation injures the reputation of the Hungarian wheat.

BRITISH agriculture appears to be going from bad to worse. We read in the London "Corn and Produce Gazette" that "in Sussex not one farmer in twelve can freely claim the limited advantages of the Agricultural Holdings Act. Landlords desire no improvements to be made if they have to pay for them. The result is that farmers make no improvements. They are in consequence said to be lazy and deficient in intelligence and energy. American, Canadian, Australian and even Russian farmers have every inducement to make improvements, because they work on their own land. British farmers are thus prevented from helping themselves, while foreign competition is encouraged."

SAYS the Liverpool, England, "Corn Trade News" of May 4: The bright sunshine has quite overpowered any strength that may have resulted from the improved tone of American markets. It is justly pointed out that what the American reckons as a strong feature, namely, the resumption of active exportation, is really a depressing factor viewed from our standpoint, and that if we are to have heavy shipments from the Atlantic seaboard, along with a continuation of the Russian shipments and the customary large Indian supplies during May, June and July, it is likely we shall get about twice as much wheat as we want. For our part, we consider that the fact that America has again come into line with the rest of the world is a certain augury of an improved condition of things in the wheat markets in both hemispheres.

WRITING on the subject of impurities in Indian wheat. Mr. J. Harrison Carter, the well-known British milling engineer, says in the London "Millers' Gazette" of May 13: I can not think the National Association of British and Irish Millers will submit to have the conditions under which wheat is to be shipped from India, except to the port of Liverpool, dictated to them by the London Corn Trade Association. The Hon. J. Forbes Adam says "the fault lies not at the door of Bombay exporters, but with millers, buyers and corn trade associations in England," and he adds that "the Bombay Chamber of Commerce resolved to request the London and Liverpool Corn Trade Associations to fix the refraction on all wheat sale contracts at not over 2 per cent." Liverpool agreed, London declined, and the latter followed this up with a report at the India Office meeting which I felt bound to denounce as a most uncompromising document, and which is really the most obstructive and no-surrender manifesto which, I should say, was ever issued from a public commercial body called upon to assist in the improvement of a great national commercial interest. I did not think before that an association could be found in England whose patriotism was so entirely confined to their pockets. I mentioned at the meeting that some of the largest firms in Ire-

land and England used very little Indian wheat, and several millers noted that a number of small millers can not use it. The Government reports from millers prove this incontestably, but, notwithstanding this, I have failed to find one single sentence in the London Association's circular which admits willingness to co-operate in assisting the millers. It is suggested in the Government report that Indian wheat was probably sent to Mediterranean ports in better condition than to England, but I doubt this. In Marseilles I know that, the climate being dry and hot, washing is one of the ordinary operations of the wheat-cleaning system on all wheats, and therefore all mills have the necessary washing and cleaning plants; but the manufacture of pure semolina is a large trade there, and some sorts of Indian wheat are found very suitable, but in the very best samples of semolina I found traces of dirt and stone. This illustrates a fact well known to millers, that, after the "break flour," the next to be damaged is the highest qualities. Though I went to Lord Cross's meeting as a member of the London Chamber of Commerce, I had not intended to speak, but while sitting as a listener, a gentleman whom I do not know came and asked me to reply for the London contingent, as the other side had had it nearly all their own way. I did my best, though badly, to reply to them, and I wish I could have more forcibly assisted the northern corn traders and the millers. My knowledge of the milling trade enables me to say, without any chance of being contradicted, that almost unanimously the millers object to the dirt in Indian wheat, and the same, I believe, applies to the milling engineers. I believe they would thoroughly approve contracts being based on only 2 per cent. refraction. It is stated in the Government report that what Messrs. Ralli call the 5 per cent stuff (how clearly they know the name to give it) is partly made up of dirt and stones purchased by the native traders and mixed into the wheat sold as "fair average quality." The practice was suggested from the fact that the threshing-floors are made of dried mud, in which there are also stones. As it will take years generally to introduce the threshing-machine, I suggest that an effort should be made to introduce cement threshing-floors.

APPEARANCES do not indicate decidedly which element will predominate in the Milwaukee convention, the spring-wheat or the winter-wheat. The latter have had the best of the bargain during the past few months, and the former may be induced to attempt to "even up things" by manipulating restriction of output and other features of the gathering in their own particular interest. It may not do amiss to warn both factions that, with the large surplus estimated to be on hand on July 1 next, and with the prospects of an abundant crop of wheat this season, there will be great difficulty in controlling output, prices, modes of doing business and the general conduct of the trade. The millers of the United States have just passed through a year of hornswoggling by gamblers, liars, speculators and other leeches on their industry, and that year has not been an over-profitable one for them. They are inclined to allow things to take a natural course hereafter, and no restriction attempted by the few will be able to bind the many.

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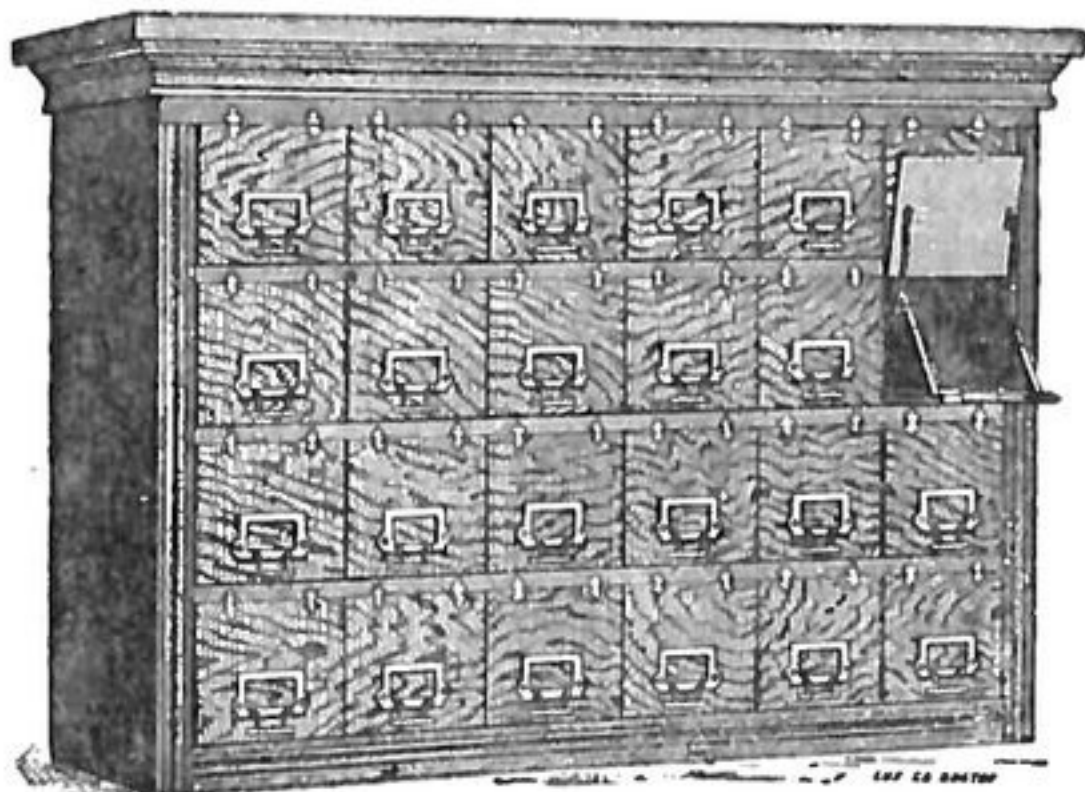
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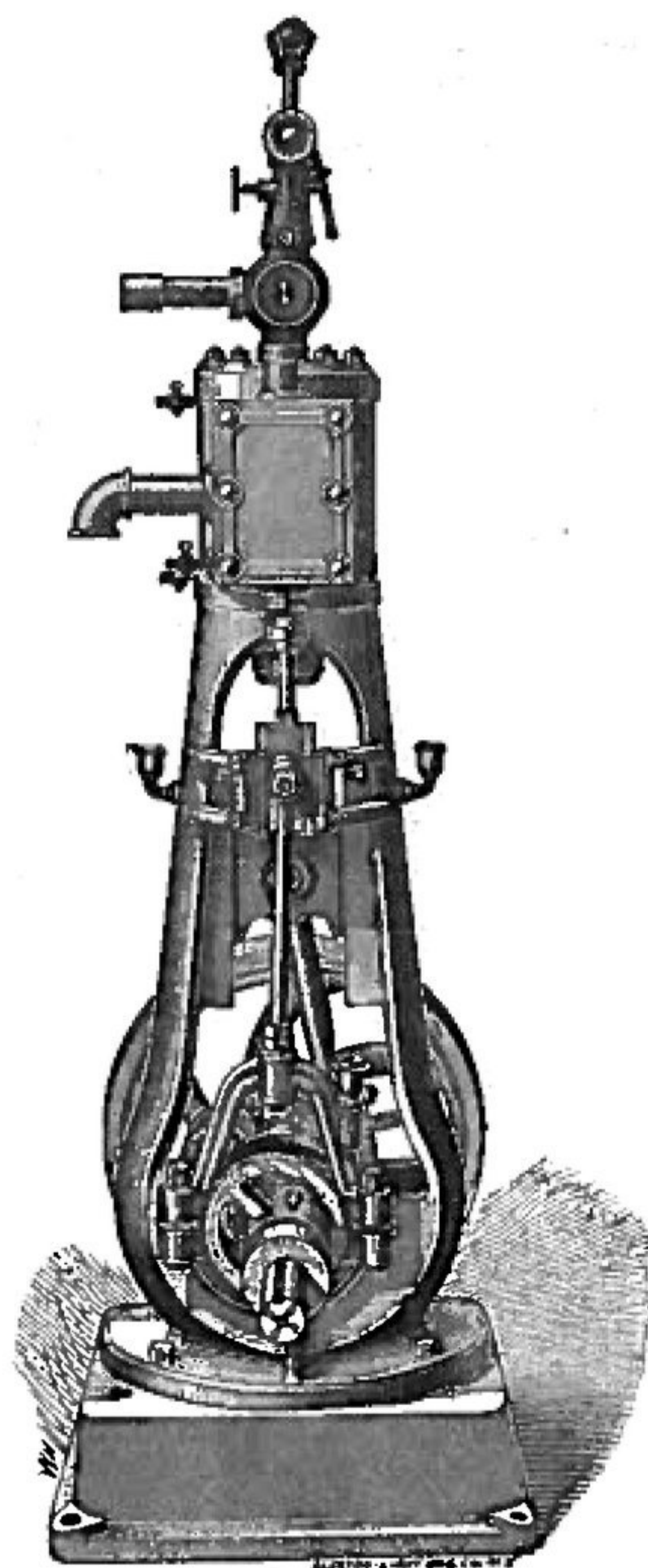
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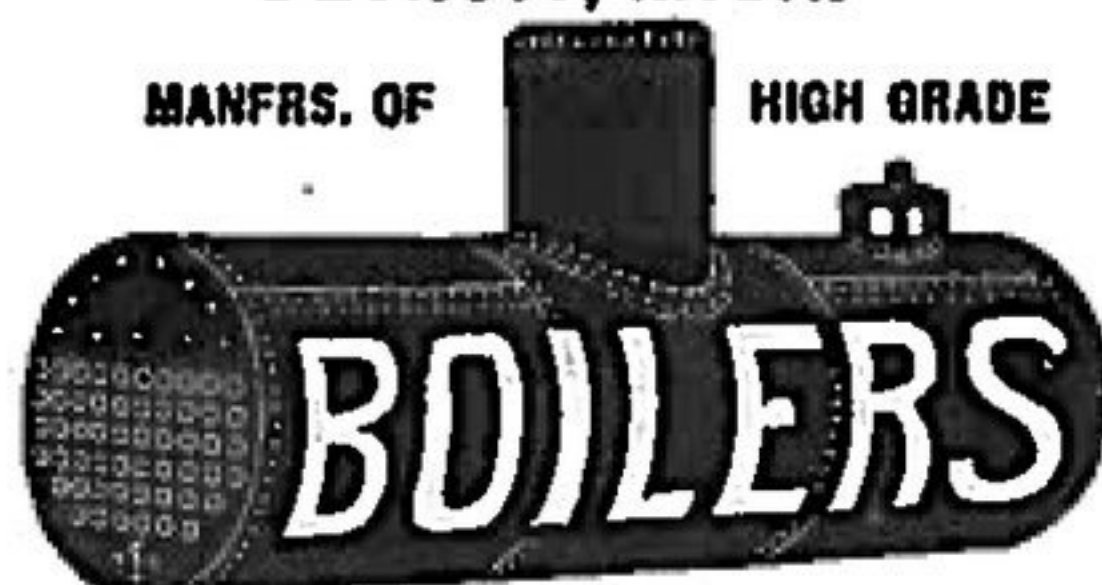
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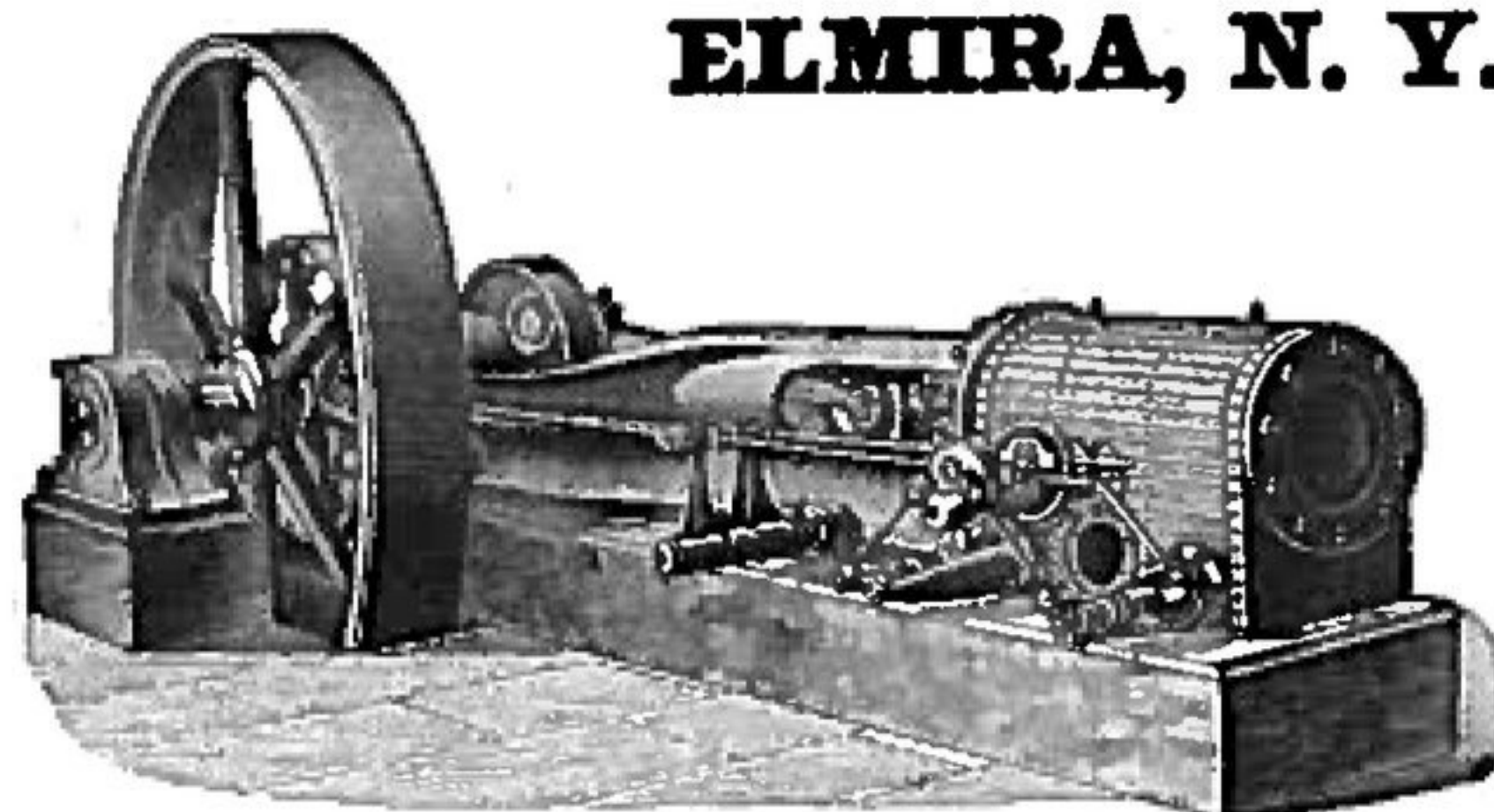
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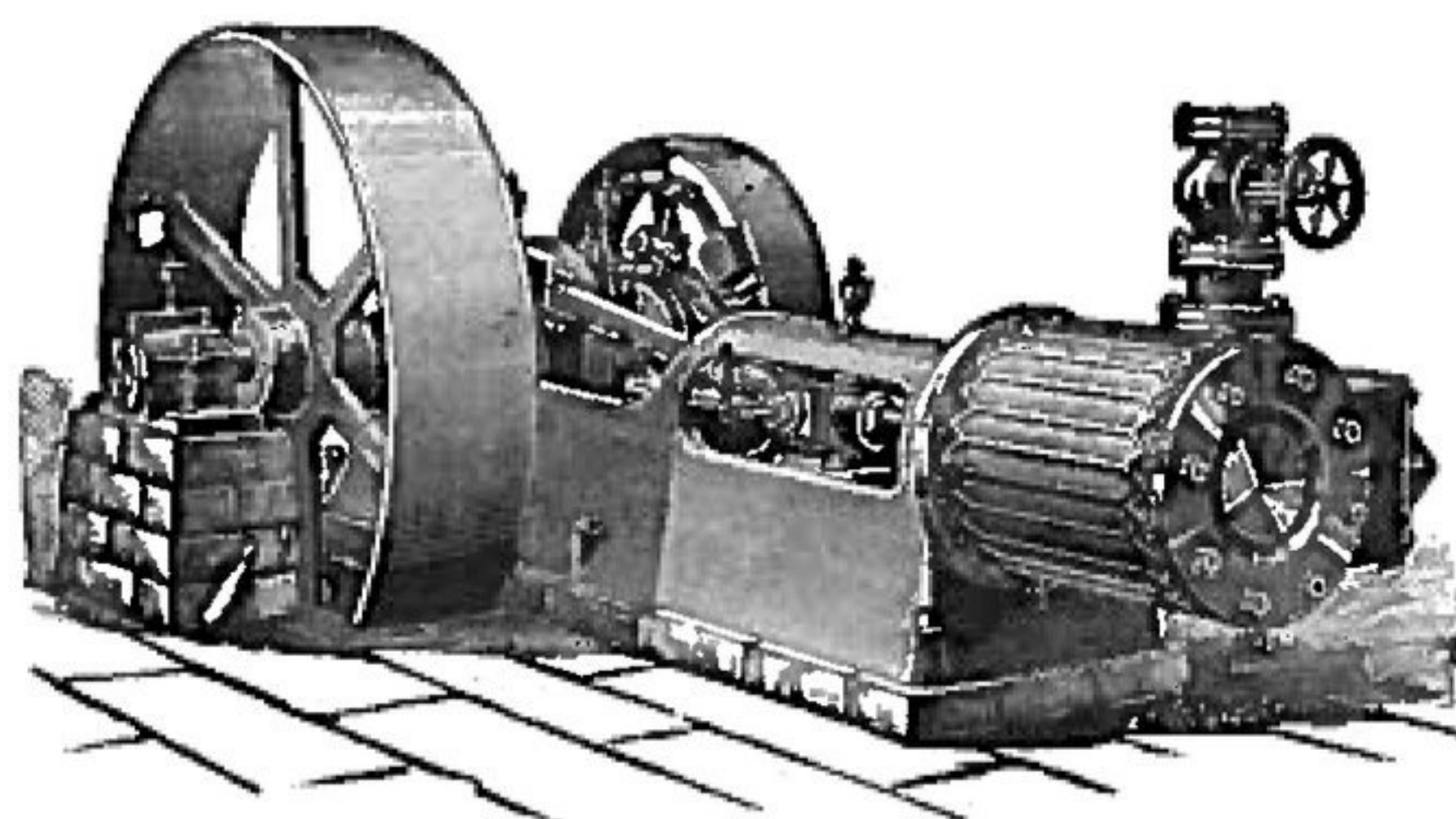
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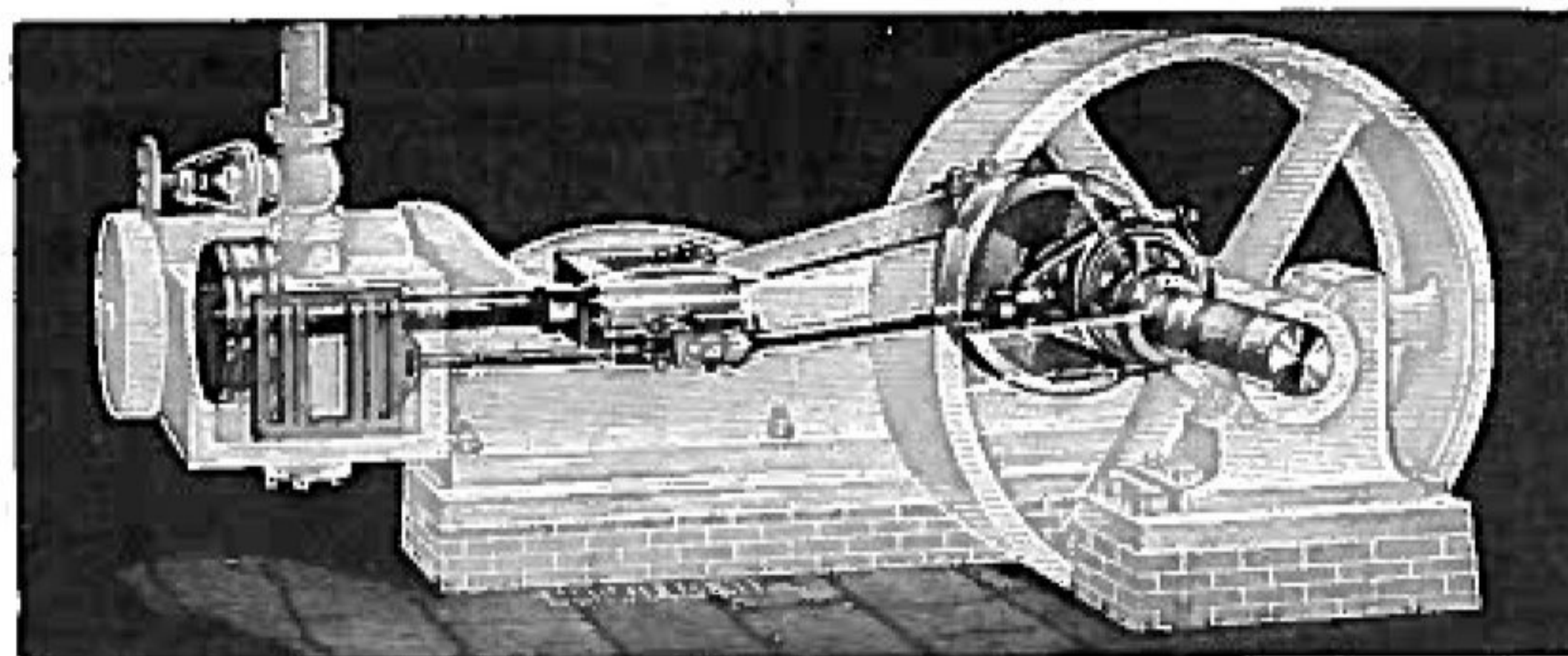
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For Illustrated Circular Address,

PORTER MANUFG. CO., LIMITED, SYRACUSE, N. Y.



OFFICE OF THE MILLING WORLD,
BUFFALO, N. Y., June 1, 1889.

Friday of last week saw wheat a very little stronger and higher on better cables and covering by shorts. May wheat opened at 81c. and closed at 81½c. Options 1,600,000 bushels. May corn closed at 41½c. and oats at 28½c. Wheat flour was steadier with wheat. Inquiry for all grades was better. Exporters for Europe were still out of the market. The minor lines were featureless.

On Saturday the cables were easier and there was a larger movement in the West, making the markets dull and lower. May wheat closed at 81½c. Options 1,610,000 bushels. May corn closed at 41½c. and oats at 27½c. Wheat flour ruled duller, with some demand for scarce grades. The minor lines were quiet and featureless.

On Monday there was a dull wheat market. May wheat opened at 81½c. and closed at 80¾c. Options 950,000 bushels. Heavy western movements sent corn and oats off. May corn opened at 41c. and closed at 40c., and May oats closed at 27½c. Both were very active on the decline. Corn options 1,144,000 bushels, oats 250,000 bushels. Wheat flour was in better demand but unchanged in price. There was some export trade. The other lines were quiet. The visible supply in the United States and Canada was:

	1888. May 25.	1888. May 26.	1887. May 28.
Wheat.....	21,284,385	27,662,465	43,212,520
Corn.....	11,054,930	8,268,30	013,073,011
Oats.....	0,341,751	5,002,811	3,750,208
Rye.....	1,247,092	200,123	277,270
Barley.....	613,557	878,495	212,365

On Tuesday there were reports of considerable damage by frost and cold weather in the Northwest and covering by shorts, resulting in stronger markets. Corn was reported seriously nipped in Ohio, Indiana and other states, and wheat was reported quite badly damaged in North Dakota, Minnesota and Manitoba. Tuesday night's frost were severe in Ontario, western New York, Pennsylvania and Ohio, doing great damage to corn, potatoes and other vegetables and fruits. May wheat opened at 80¾c. and closed at 81½c. Options 1,100,000 bushels. May corn closed at 40¾c. and oats at 28c. Wheat flour was less active, with buyers waiting to see which way wheat was likely to go. The minor lines were quiet and featureless.

Following are the quotations for flour:

SPRING FLOUR.		
	Sacks.	Barrels.
No grade.....	\$1.70@1.85	\$....@....
Fine.....	2.10@2.15	2.25@2.50
Superfine.....	2.30@2.60	2.70@3.00
Extra No. 2.....	2.00@3.10	3.00@3.25
Extra No. 1.....	3.30@3.75	3.50@4.25
Clear.....	3.35@3.75	3.75@4.00
Straight.....	4.45@5.00	4.50@5.25
Patent.....	5.30@5.60	5.15@6.85

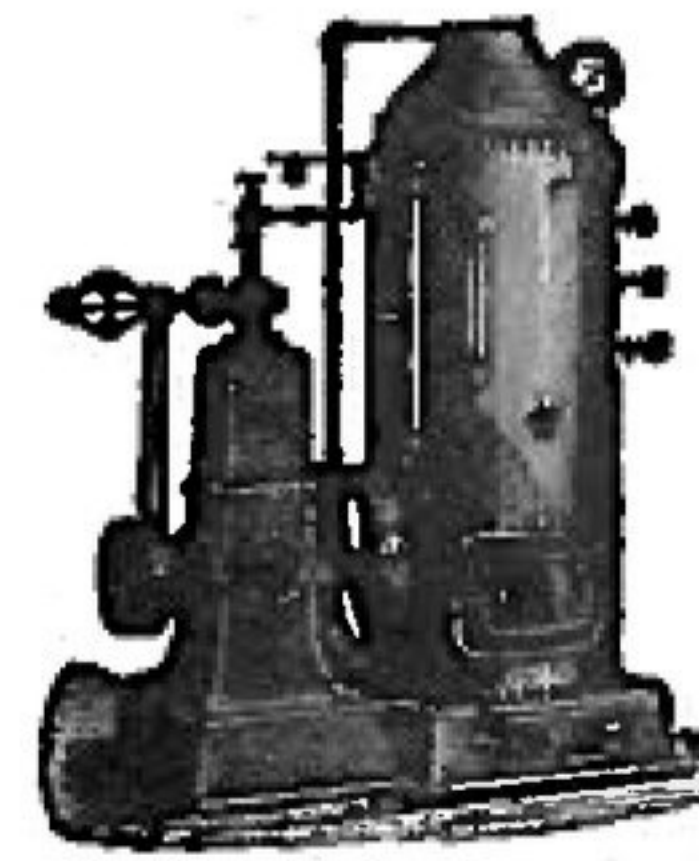
WINTER FLOUR.		
	Sacks.	Barrels.
No grade.....	\$1.80@2.00	\$....@....
Fine.....	2.20@2.50	2.35@2.60
Superfine.....	2.60@3.00	2.90@3.15
Extra No. 2.....	3.10@3.40	3.35@3.60
Extra No. 1.....	3.50@4.25	3.80@4.80
Clear.....	3.75@4.10	4.00@4.55
Straight.....	4.25@4.60	4.50@4.85
Patent.....	4.50@4.75	5.00@5.35

CITY MILLS.		
W. I. grades.....	\$4.30@4.45	
Low grades.....	2.35@2.65	
Patents.....	5.00@6.00	

Rye flour was steady at \$2.65@3.00 for the whole range. Malt was steady at 92½c@1.00 for Canada, 85@87c. for 2-rowed State, and 88@95c. for 6-rowed State. Mill-feed was dull at the following quotations: 60@65c. for 40-lb; 55@80c. for 60-lb; 60@65c. for 80-lb; 72½@80c. for 100-lb. and sharps; rye, 75c; oil meal,

\$1.27½@1.32; cotton seed meal, \$1.25@1.35. Corn products were unchanged, with a fair export demand for barrel stock, of which 400 Brandywine sold at \$2.85; 1,500 sacks sold to the trade at Monday's reduced range of prices. The quotations were as follows: 78@81c. for coarse, 90@95c. for fine yellow, 95@98c. for fine white. Brandywine and Sagamore, \$2.85; Western and Southern, \$2.65@2.75; hominy, \$3.50@3.60.

A well-known and extensive dealer in Canada barley, located in Toronto, writes as follows to the *Mail* of that city: "The state of the Canadian barley trade has for months past been a matter of great concern to grain dealers and farmers in Ontario. Until last year Canada barley was greatly preferred by American maltsters, and it always found a ready sale at higher prices than was paid for American barley; but this past season the New York state barley was so exceptionally fine that it was used very extensively, and in some cases in preference to Canadian barley. In the early part of the season the Canadian farmers were not satisfied to take a fair price for their barley and held for higher prices, which the brewers would not pay, so they left the Canadian barley alone, and the farmers now have considerable barley on hand, which they find hard to sell. This fact is known to the brewers in New York state, and they are informing their correspondents in this city that Canada barley will be heavily handicapped from the start this year, for the reason that buyers will fear that they are getting old barley mixed with new. They further advise that they will require none of that kind of barley, and it is the general opinion that unless the stocks now in store are disposed of very shortly they will bring a very low price indeed in September. This feature must be looked into at once, not only because of the loss on the stock itself if carried over, but for the reason that only by getting out what is now in store will the market for the new crop be saved. And Canadian grain dealers and farmers will require to start the season free from any suspicion whatever of holding old barley. They will have all they can contend with without carrying a burden of this sort. They will have to face the bad results arising from the too high prices at which the season opened last year. The inclination of brewers is to use the cheaper western barley instead of the superior but higher-priced Canadian article, and in the face of a very large American crop."



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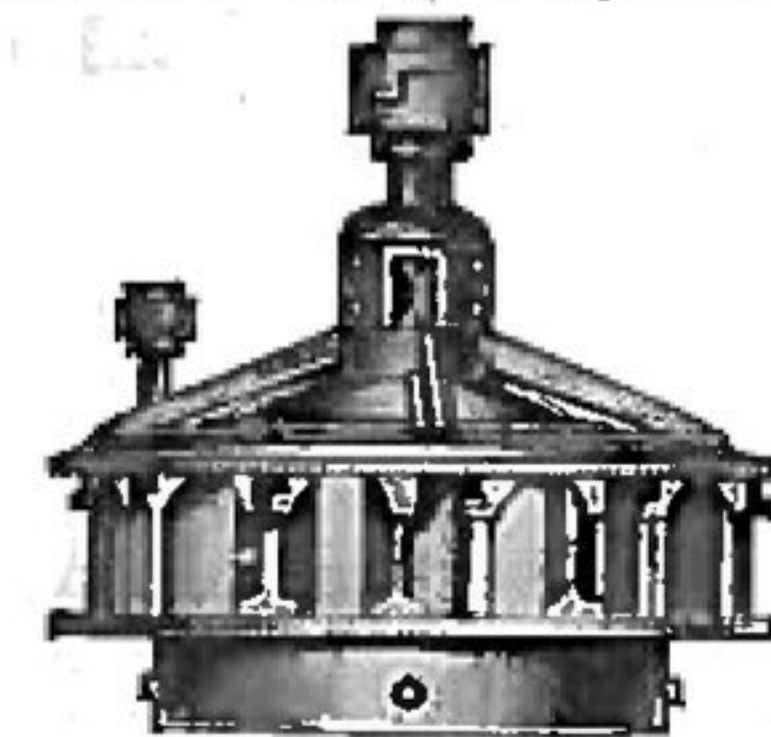
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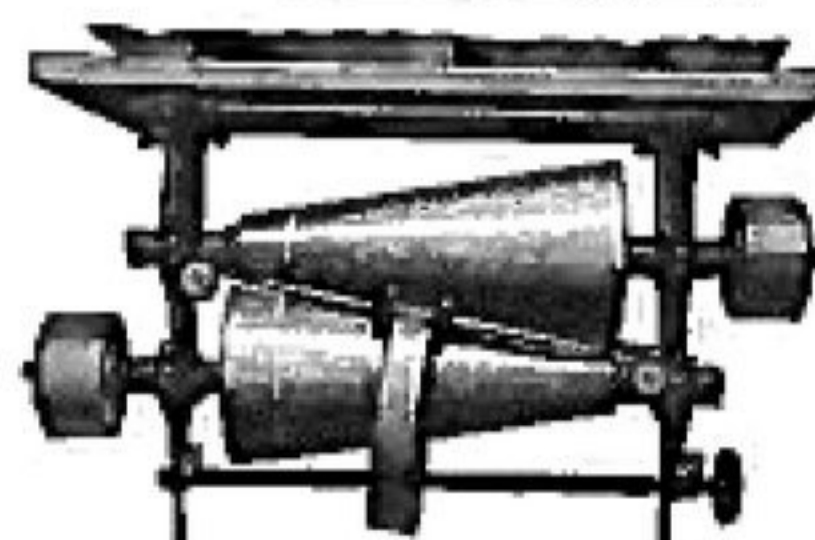
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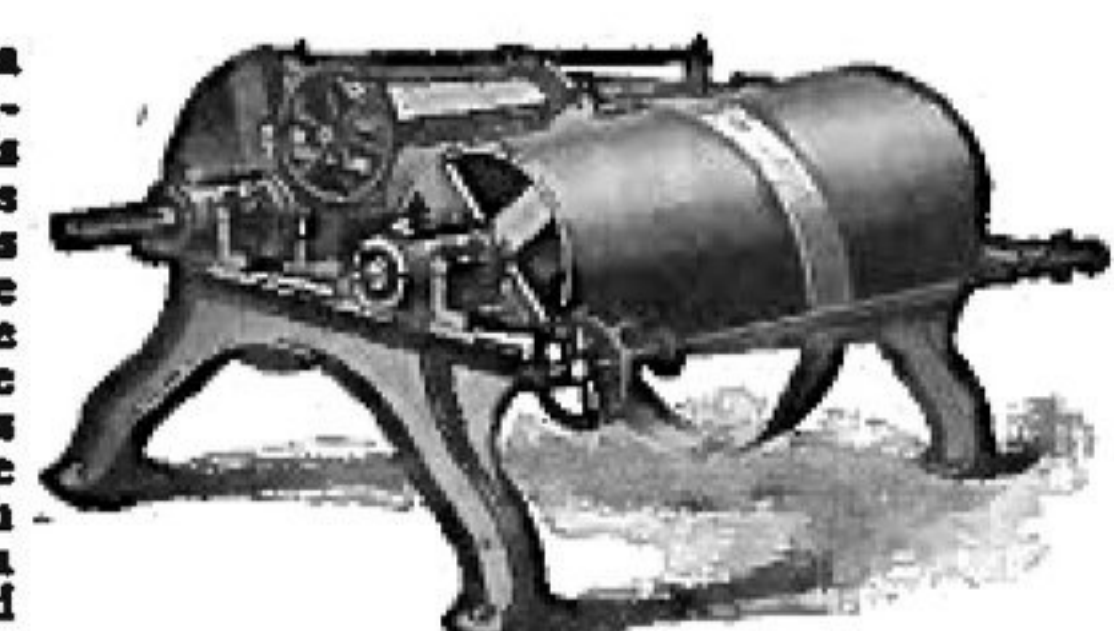
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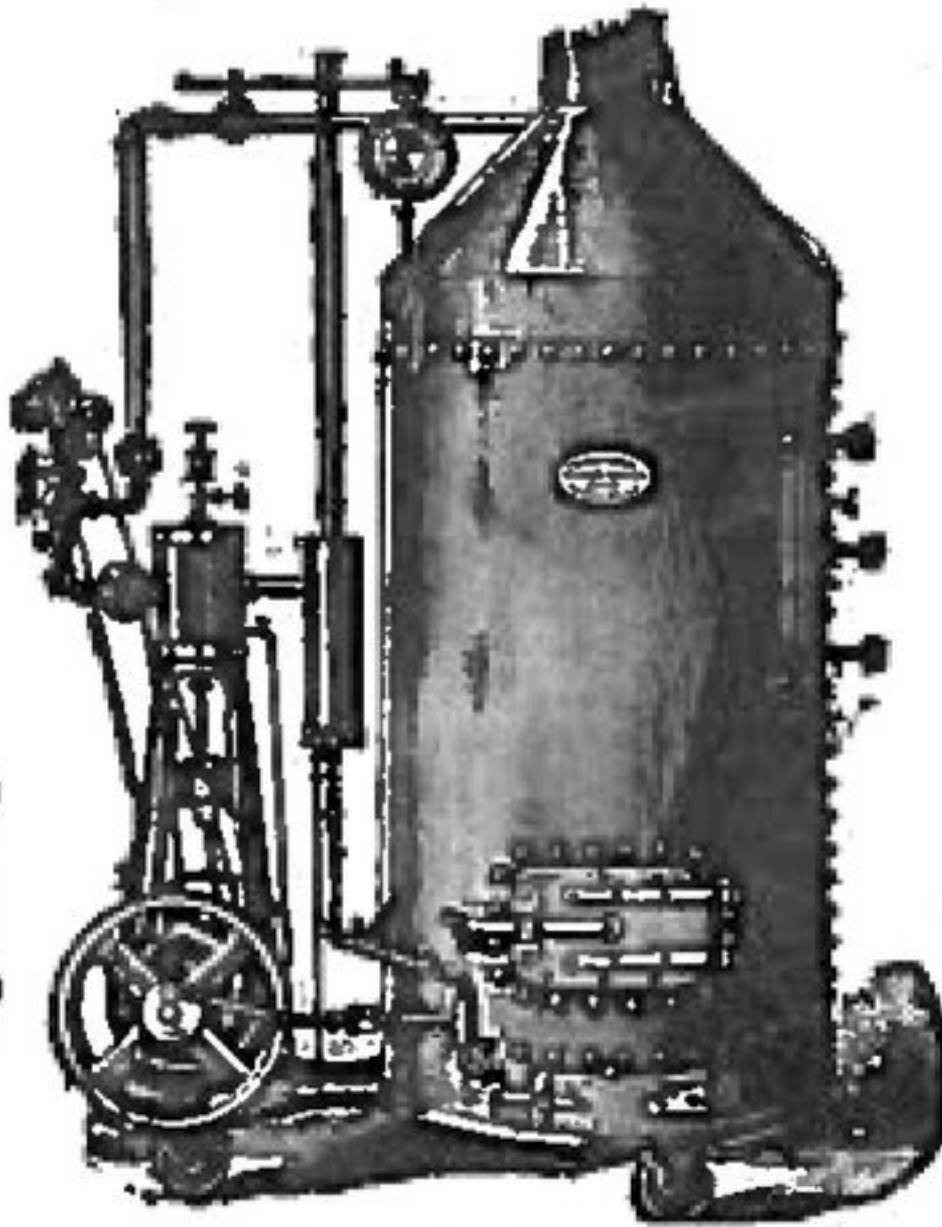
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These Linings are curved edgewise and flatwise, be-
sides having the edge beveled, so as to make them fit
the head and chine PERFECTLY, without springing
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If you use them once you will have NO
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with two strong wires, to make them handle
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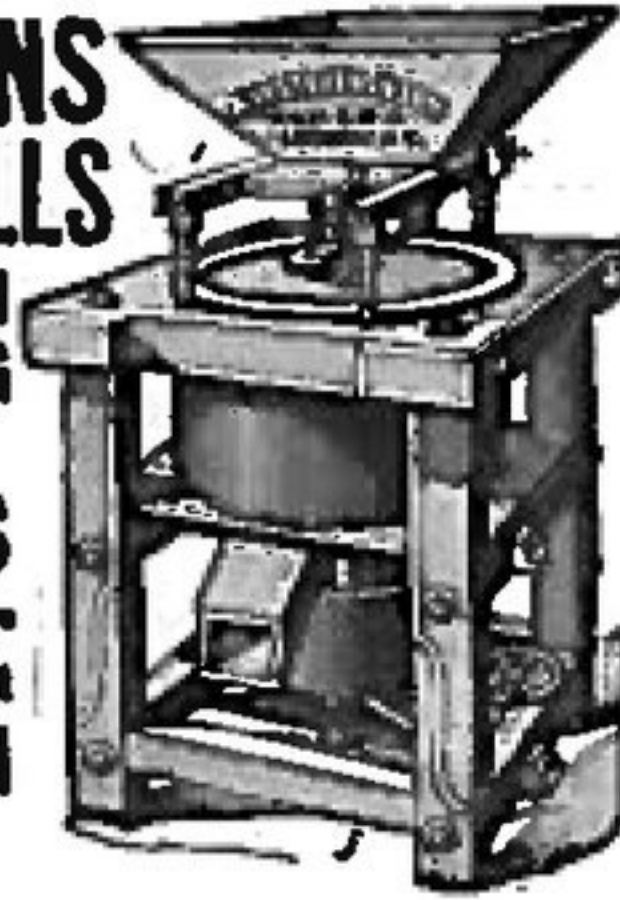
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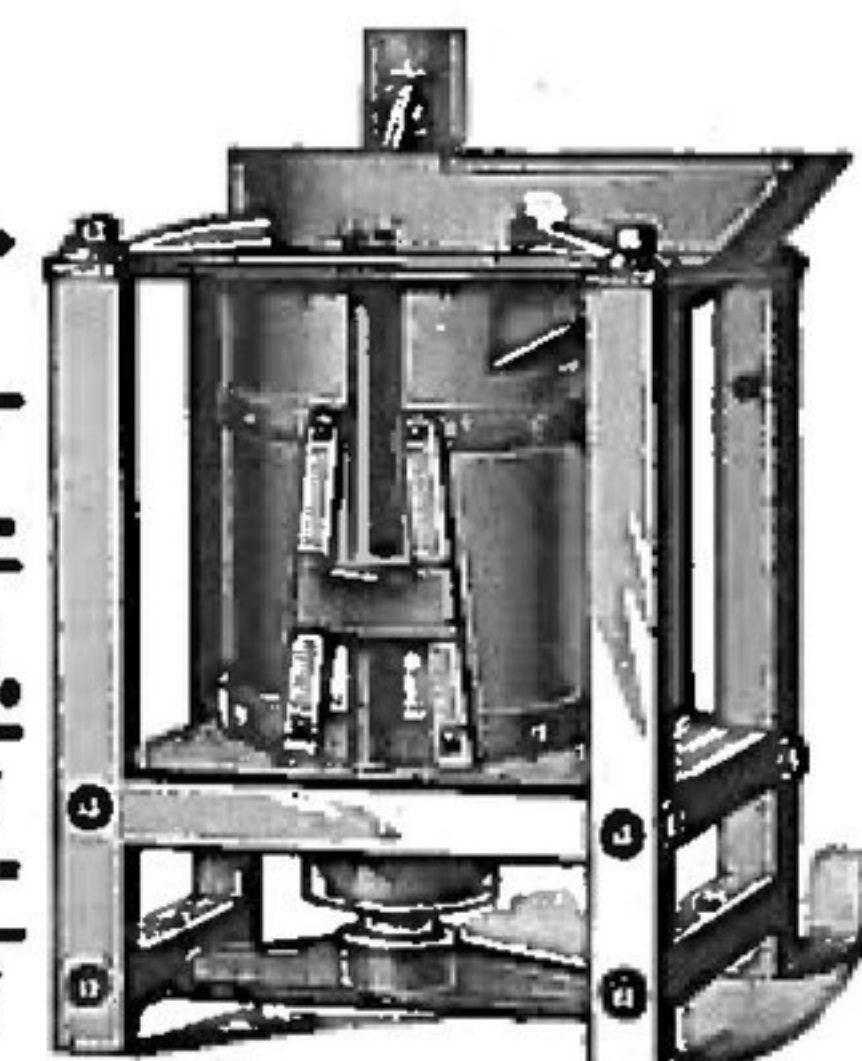
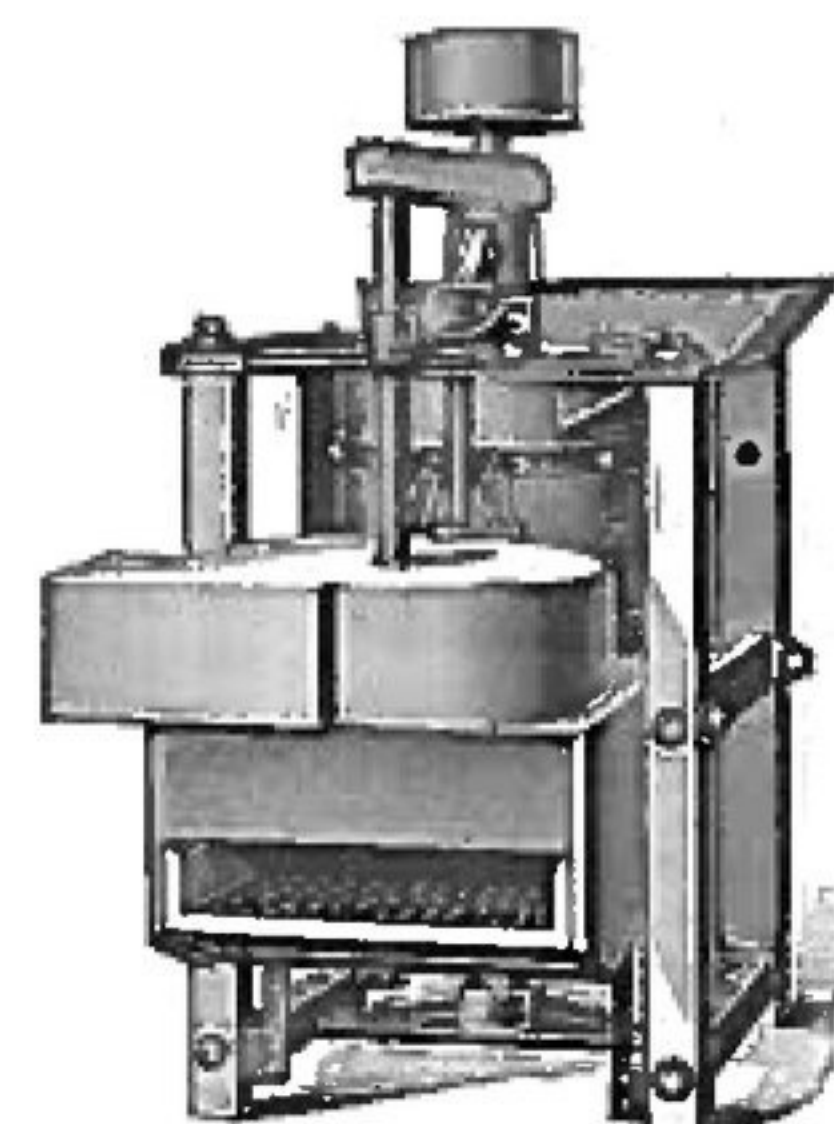
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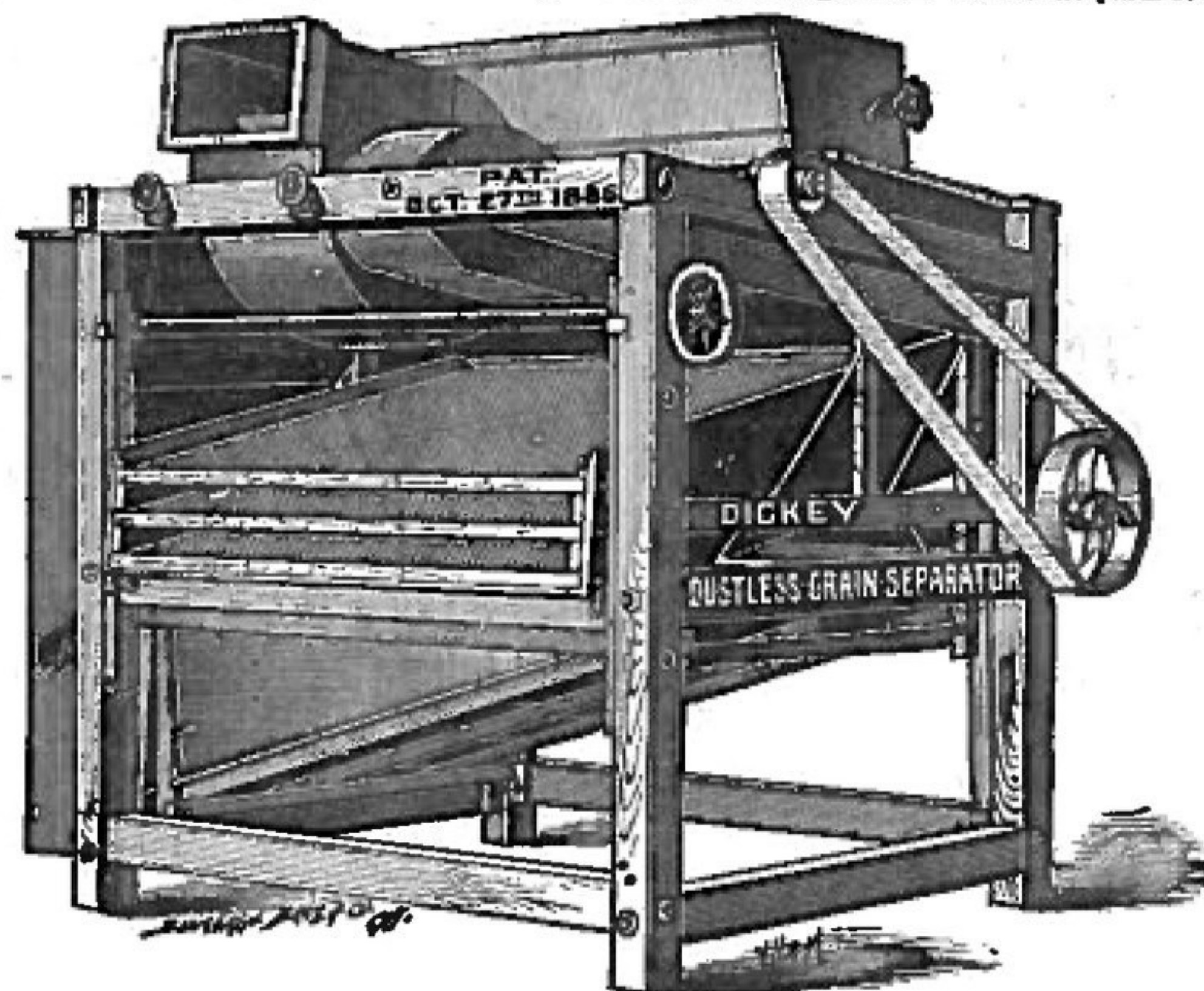


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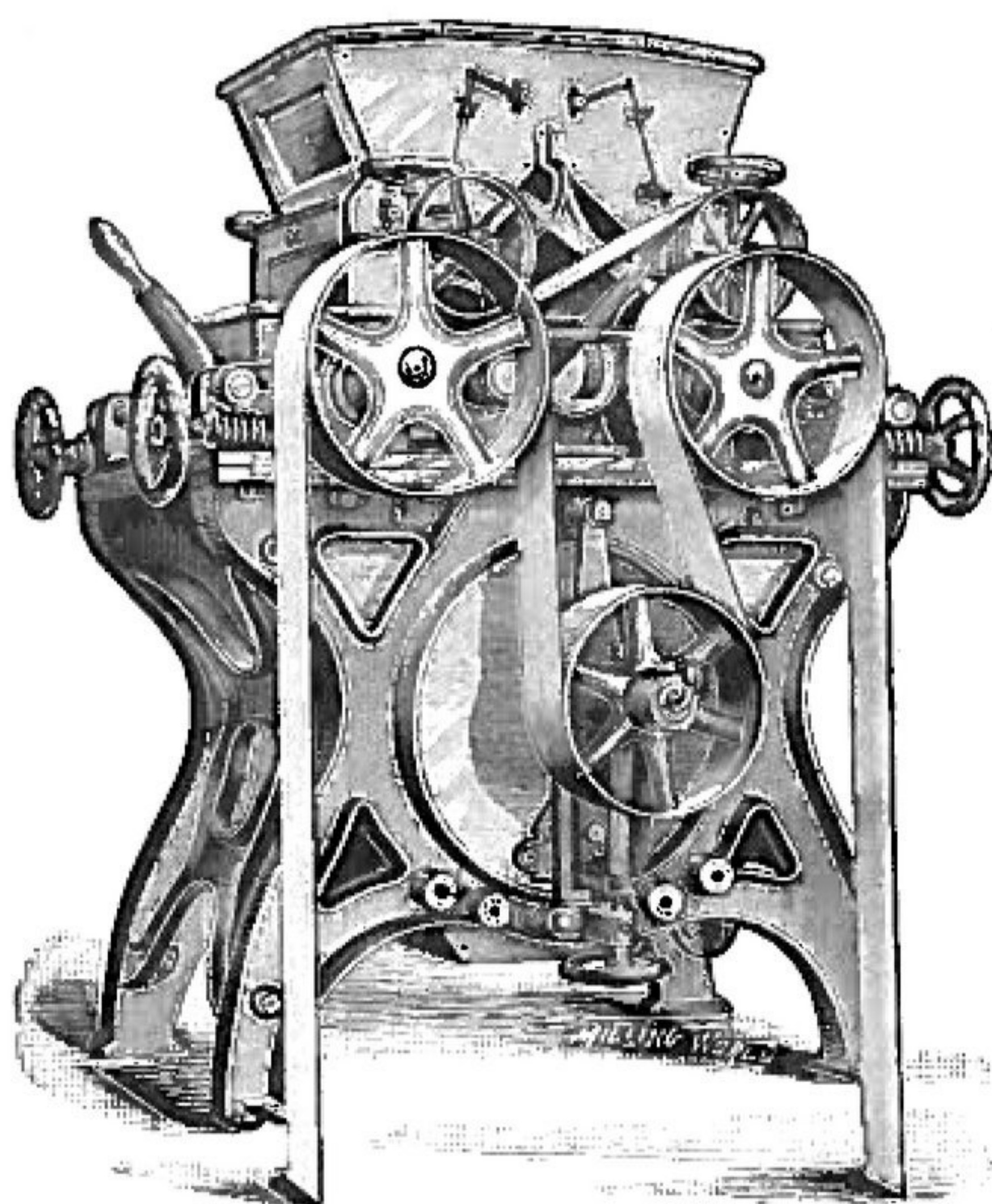
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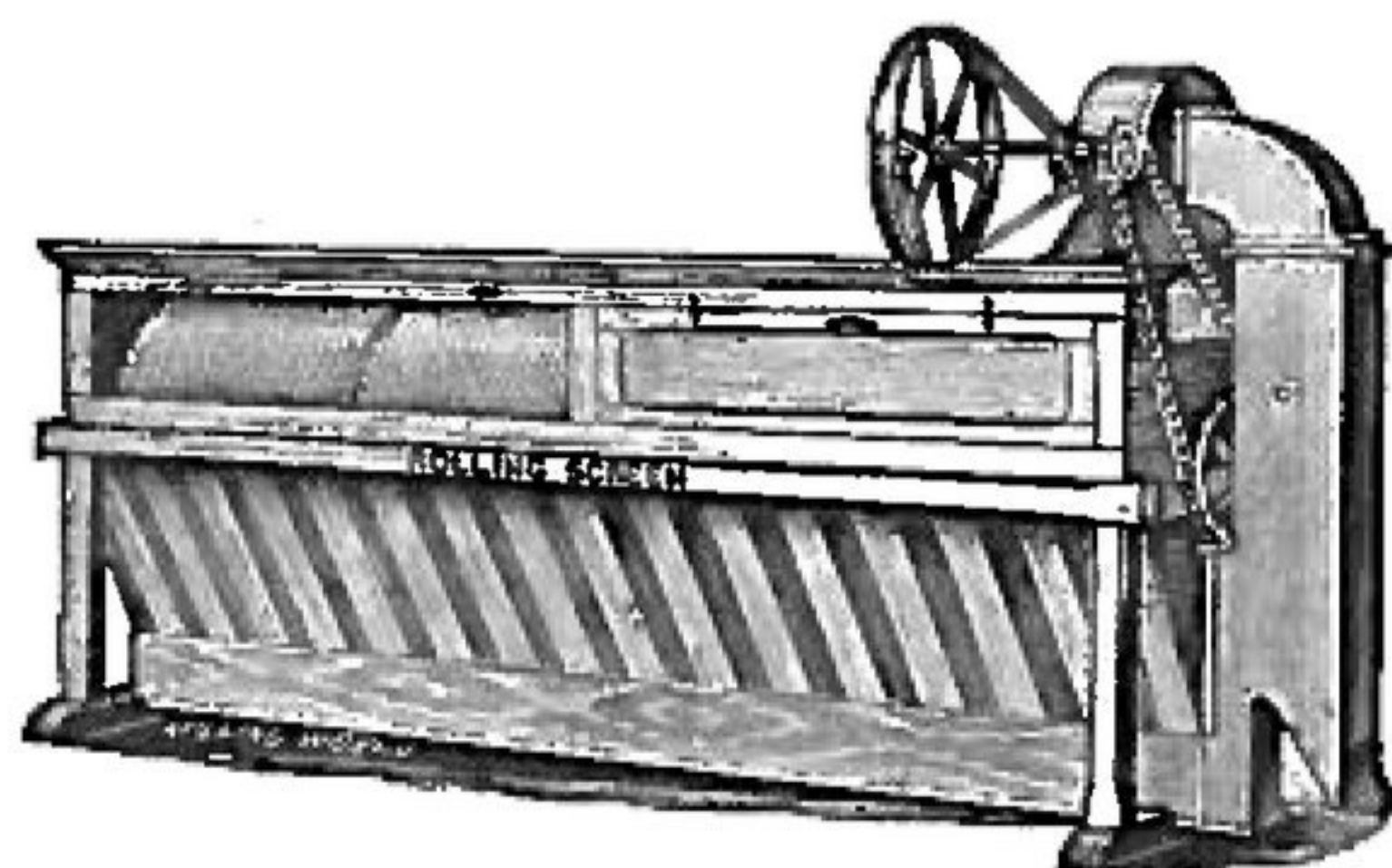
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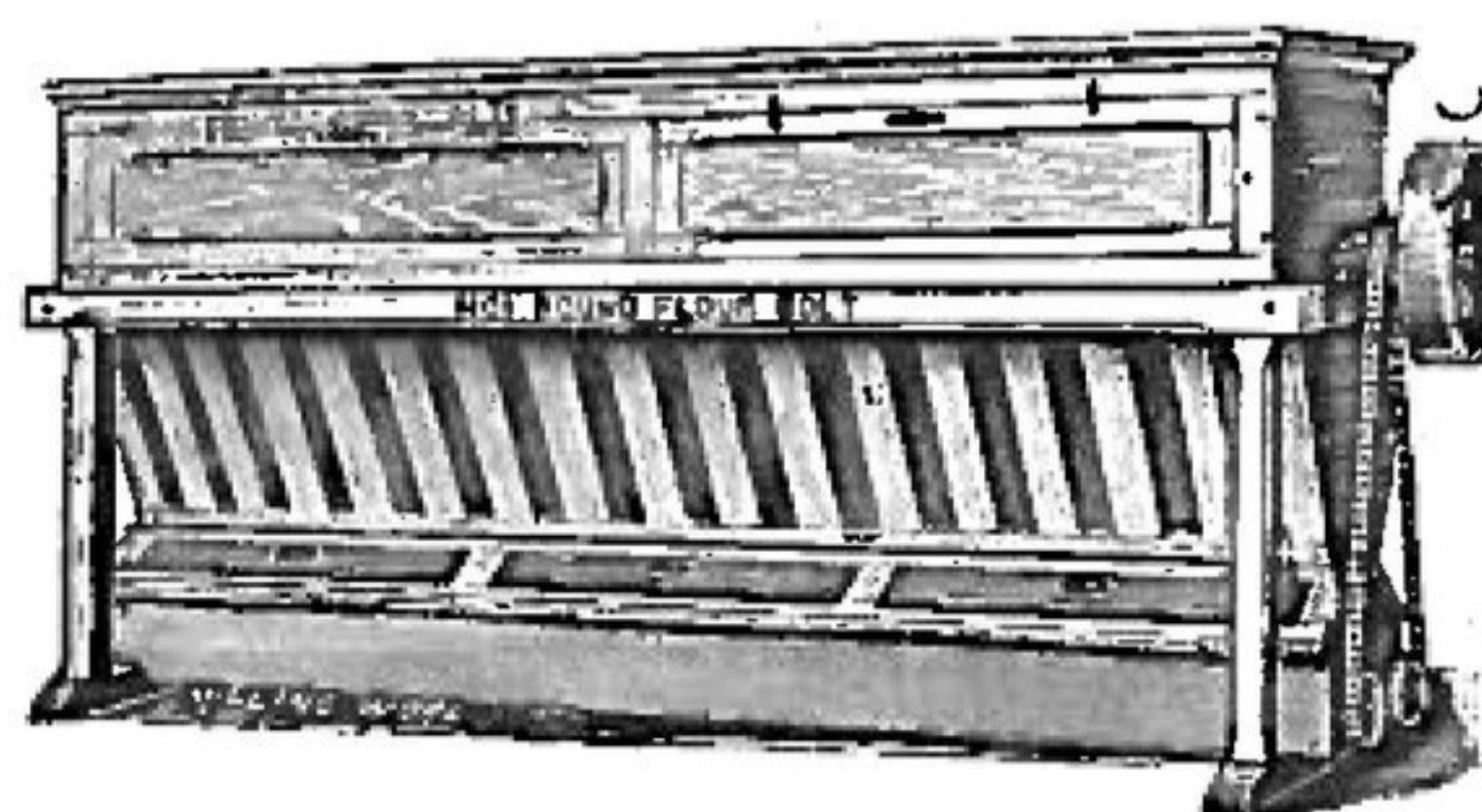
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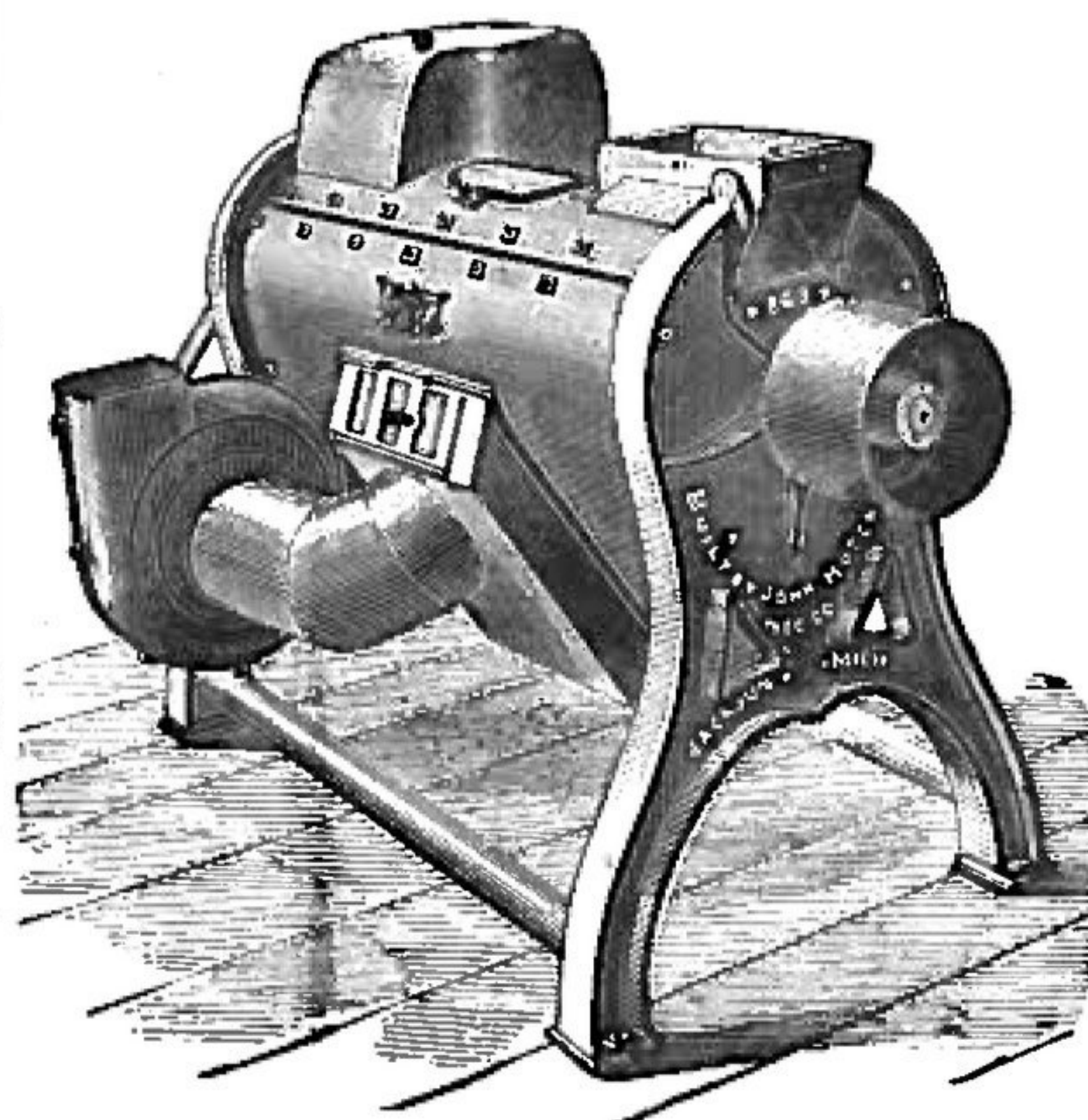


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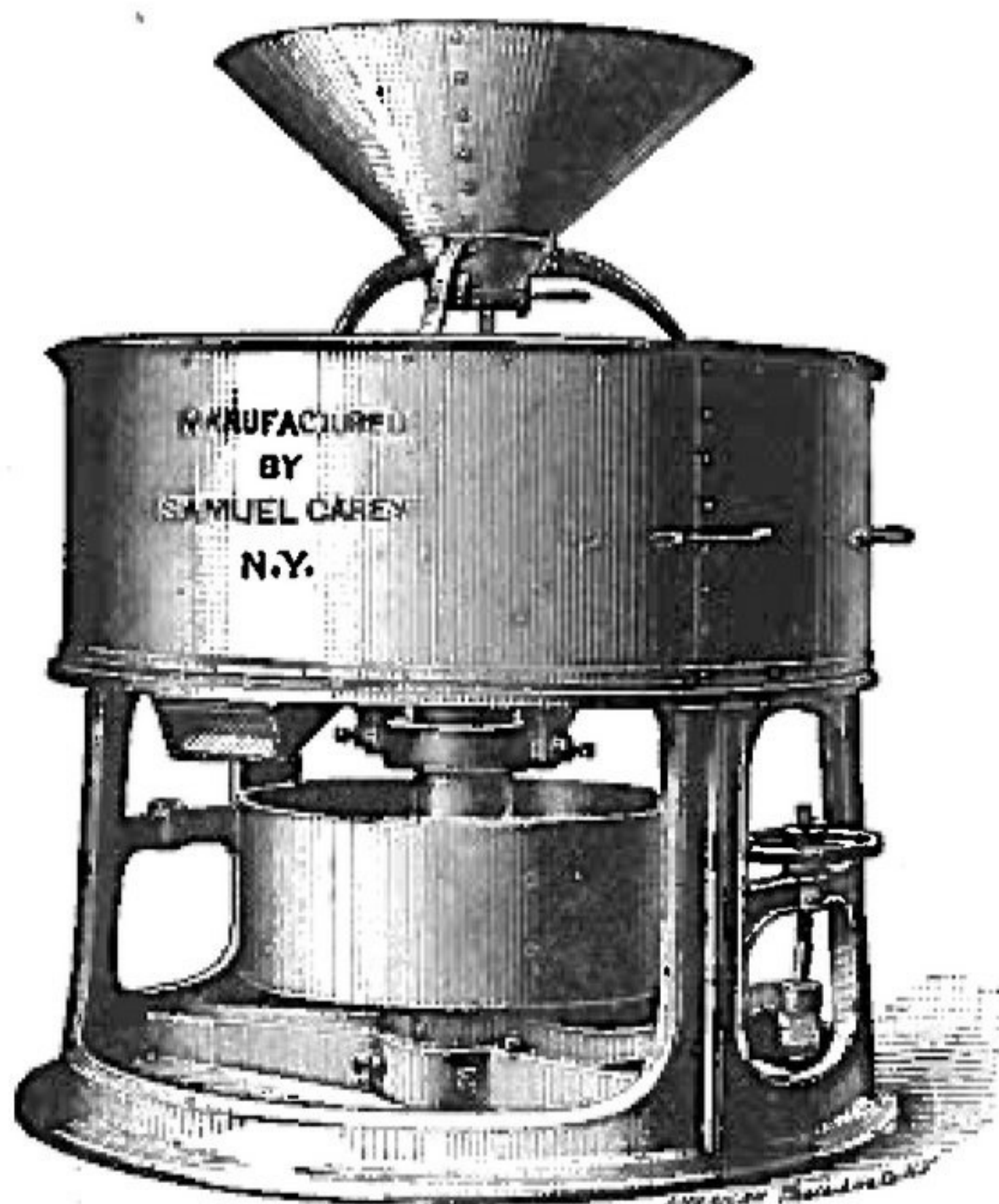
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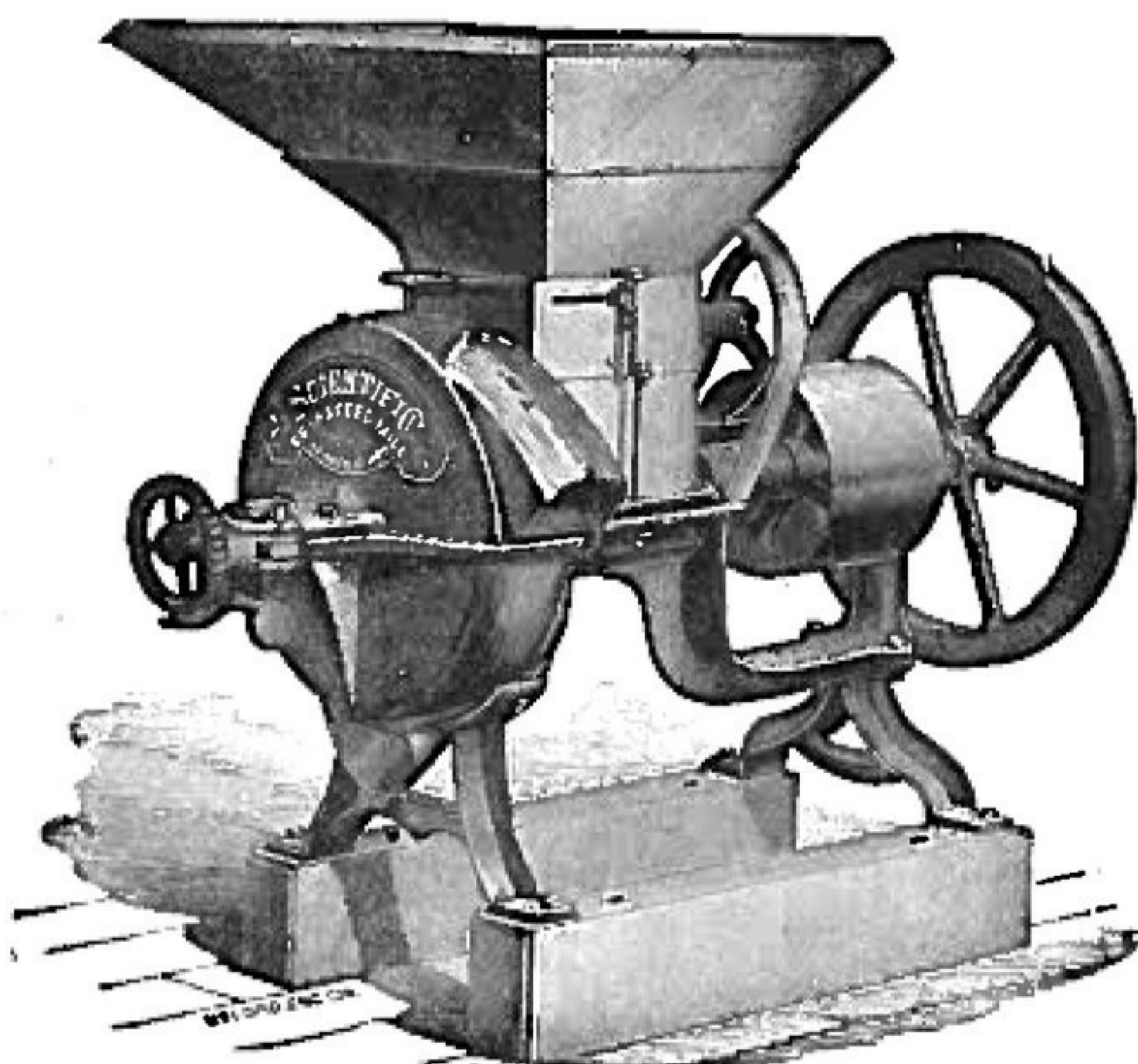
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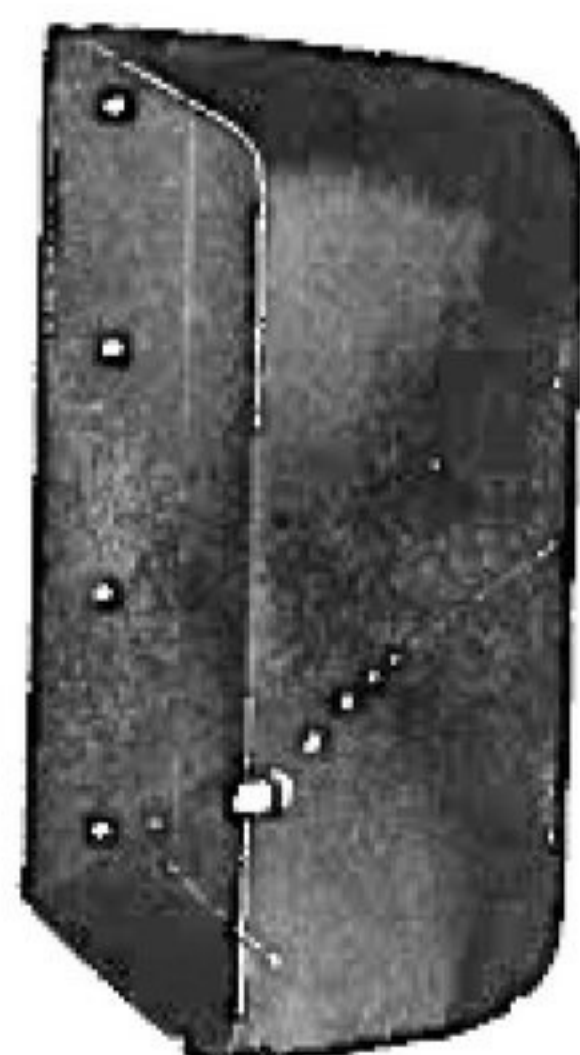
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